DESCRIPTIVE CATALOGUE

OF THE

REPTILES OF BRITISH INDIA.

BY

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GEOLOGICAL SURVEY OF INDIA.

CALCUTTA:

THACKER, SPINK AND CO.

Bombay: THACKER, VINING & CO. London: W. THACKER & CO.

1876.

CALCUTTA:
PRINTED BY THACKER, SPINK AND CO.

PREFACE.

In compiling the present Catalogue my object has been to meet a want which at present blocks the way to the general study of Herpetology in India, and to supply in an accessible and portable form such a condensed description of our Indian Reptiles as may enable any one interested in the Fauna of his locality to acquaint himself with the Reptiles he meets with. Some such work, indeed, as that now offered, is the indispensable precursor of a more complete and exhaustive work, for which, at present, our materials are wholly inadequate; and the main benefit I anticipate from the present publication is, that it may be the means of conducing to the formation of a large mass of notes, especially such as refer to distribution of species, from men who are at present unable to make trustworthy observations simply from the bulky or inaccessible nature of the books which treat of this division of the animal kingdom.

The present Catalogue is based on Günther's Monograph, published by the Ray Society in 1864. But though a great addition has been made to the Indian Reptile Fauna since that period, yet the total number of species in the present Catalogue will not greatly exceed those described by Günther, from the fact that considerably more than 100 species (exclusive of Hydrophidæ which with Batrachia I do not at present intend to include), enumerated by Günther, are excluded by me on geographical grounds.

My descriptions of species will be found to vary greatly in length and as regards the amount of detail given; but this is intentional, as my object is not to give an exhaustive description of any species, but merely such a description, and so much detail of its structure, as will enable the student to specifically determine it, my object being the production of a useful working student's handbook, rather than a more pretentious Zoological monograph, which must be the work of some future decade; at the same time I am so conscious of its many shortcomings, that nothing but my urgent sense of the want of some such work emboldens me to come forward with what I cannot but think will be an acceptable contribution to brother naturalists in India, interested in this branch of natural science, or the class of men as they have been contemptuously described, who are "desirous of acquainting themselves with animals." (Zoological Record, 1868, p. 5.)

As for my critics, I fully admit, what they will no doubt put with great force, in a variety of shapes, that 'the book would have been better written, if the author had taken more pains,' but as one specimen of the difficulties a compiler has to encounter in India, I may mention that there is no complete copy in Calcutta of the Madras Quarterly and Monthly Journal of Medical Science, in which Beddome's original descriptions of South Indian Reptiles appeared, and it was only as these pages were going through the Press, that I managed to get some of the numbers I required. Some critics, no doubt, with that mixture of pertness, flavoured with Bœotian ignorance of Indian surroundings and drawbacks, and that inapprecia-

tion of the labours of Indian observers, which form almost a specific character of some specimens of the animal in Europe, may affect surprise, at my not waiting till I was in a position to make the work more satisfactory and complete; but as a matter of fact, an Indian official who compiles a work like the present, at odd hours snatched from other duties, whilst waiting maybe for a break in the weather to march, or whilst better men are busy saying their prayers, cannot select his own time and place, and as it is quite uncertain when I may again revisit the Presidency Capital, where alone such a work can be got out within any reasonable time, it became simply a question of doing the best under the circumstances, or doing nothing, and I leave it to the unbiased reader to determine whether I have adopted the wiser course of the two.

To the kind friends who have taken the trouble to aid me in the present undertaking I tender my grateful thanks, expressing a regret however, that the number of my creditors in this respect does not bear a more encouraging proportion to the numbers of educated, not to say scientifically trained men, scattered either in a military, medical, or administrative capacity, over the enormous area of our Indian Empire. My main contributors are Col. Nelson Davies, Akyab; Capt. Williamson, Tura; Major Swiney, Palamkotta; Dr. Hungerford, Thaietmio; A. Theobald, Esq., Madras; A. Hough, Esq., Mallewoon; A. Anderson, Esq., Futtehgurh; J. Wood-Mason, Esq., W. T. Blanford, Esq., of Calcutta, and J. Cockburn, Esq., Allahabad.

ERRATA ET ADDENDA.

Page 6, before "CHAIBASSIA," *insert*:—

"G. Arakana, *N. S.*

"Head covered with skin, without plates. Uniform pale brown. Upper jaw bidenticulate in front. Skin of body greenish brown. Pupil large, black, with a pale iris, encircled by a ring of dark umber. Claws of hind feet very long. Shell above flat, with a well marked vertebral ridge and a somewhat gibbous costal ridge down each side, quite as prominent as the vertebral ridge, though less sharply defined. Nuchal plate pointed before, triangular. Shell smooth in front, serrated behind The three first vertebrals subequal, the fourth smallest; all concentrically grooved, and rateably striated from a posterior umbo. The last vertebral is nearly as broad as four marginals. Gulars small, not half as long as the postgulars. Abdominals rather larger than Pectorals. Notch in caudals larger than a right angle. Colour above yellowish, dark mottled. Below, yellow, black mottled along the sides. An aged female measured 9-5 inches in a straight line.

"Inhabits Akyab."

Page 10, for "*crassilabris*," read "crassicollis."

Page 31 :—

"T. Phayrei, Theob.

"It is not improbable that this is the T Gangeticus apud Cantor, said to occur at Pinang."

Page 31, add at bottom :—

"T. ephippium, Theob. Pro. A. S. B., August 1875.

"Young only known, and recognised by a rather irregular saddle-shaped dark patch on the back, which fades on the shell drying. No ocelli.

"Inhabits Tenasserim."

Page 33 :—

"Gharialis Gangeticus.

"It is generally supposed that the long nosed fish eating *Gharial* will not attack man, but Capt. Gordon Young, Deputy Commissioner of Hushiapur, told me that one of these creatures attacked a man who was crossing a shallow stream, close to the Duke of Edinburgh's Sporting Camp near the Nipal frontier. The man's cries attracted the notice of a Sepoy, who, running up,

discharged his gun into the animal, and then attacked it with the bayonet in the shallow water. It received, however, its coup de grace from Capt. Gordon Young's rifle, and its spoils became the possession of the Duke. The animal was about 18 feet (I think), and this instance is sufficient to prove that it occasionally at all events will attack men.

"It is well to bear in mind that animals seized by crocodiles always perish by drowning, as they are, unless accidentally rescued, at once dragged beneath the water and held there till they perish, the crocodile delaying his meal till putrefaction sets in, and renders easier the process of tearing off the flesh of the victim. When, therefore, bodies said to have been killed by crocodiles are brought to a surgeon, the condition of the lungs will at once prove if the victim was seized and lacerated as stated; but if no signs of asphyxia are present, then it may safely be concluded that death had occurred prior to the body being attacked by these animals."

Page 51, at bottom, add :—

"E. rugifera Stol., J. A. S., 1870, Part II, p. 170.

"Body moderately stout. Fore limbs feeble, reaching when laid forward to the front-angle of the eye. The præfrontal forms a narrow suture with the rostal, the first præocular, and the vertical. Post frontals separated; in contact with the two loreals. Nostril large round. Two loreals, the posterior one, much the largest. Five occipitals. The two first narrow, the median broadly oval, small, the two last very large. Scales in 26 longitudinal rows; round the body, large; on the back and sides strongly 5-keeled, and in 23 transverse rows. 8 rows of scales on the belly smooth.

"Colour dark brown, paler on the head. A narrow streak of greenish from the superciliary edge along the anterior part of body, with a similar one below it, both margined with brown. Two indistinct bands along the back. Upper labials yellowish. Belly yellowish white with a greenish irridescent tinge.

"Grows to nearly 5 inches (tail 2·75).

"Inhabits Kamarta, Nikobars."

Page 60, for "E. macrotis," read "M. macrotis," and before it *insert* :—

"M. Ladakensis, Gthr.

"Scales in 38 longitudinal rows, and 56 transverse. A pair of large anals covering the vent. Subcaudals broad. Ear denticulated in front. Limbs well developed. The fore-leg extends to the snout, the hind, more than half way to the axilla.

"Colour greenish with longitudinal rows of black dots. Sides obscurely banded. Belly greenish white.

"Type imperfect (head and body 2 inches).

"Inhabits Ladak."

Page 65, for "cyanelia," read "cyanella."

Page 78, at bottom, add :—

"DORYURA, *Gray*.

"Tail depressed, uniformly granular above; denticulated on the edge, and a median row of enlarged scales below.

"D. Berdmorei, Blyth.

"*Leiurus Berdmorei Blyth*, J. A. S., xxii, p. 646.

Back covered with minute, equal, granular scales. Tail depressed, tapering, slender; colour grey, with some indistinct dark markings about the head, and a dark stripe from behind the eye, forming a conspicuous interrupted or cateniform band down each side, and continued along the tail.

"Grows to 4 inches (tail 2).

"Inhabits Pegu and Tenasserim.

"D. Gaudama, Theob. Jour. Lin. Soc., vol. x, p. 30.

"Back covered with minute, equal, granular scales. Tail convex above, flattish below, not so slender as in *Berdmorei*, covered above and along its edges below with minute granular scales; tail segmented, minutely denticulate and with an obsolete marginal spine at the hind edge of each segment. Femoral pores 19 on each thigh, in a slightly curved line, separated on the pubes. Colour grey without definite markings. Grows to 4 inches.

"Inhabits the Sittoung valley near Tounghu—(Pegu).

"D. Karenorum, Theob. Jour. Lin. Soc., vol. x, p. 30.

"Back granular, regularly shagreened with about 20 rows of small whitish tubercles. Sides keeled, tail sharp-edged, segmented and denticulate, segments armed above with small spinous tubercles in transverse rows. Skin of ham slightly expanded. Colour grey, with dark streaks on the back and limbs, which fade after death.

"No distinct femoral pores existed in this male adult, but only some 10 or 12 faint pittings on each thigh, separated by some larger smooth scales in the pubic region. In the female the spines on the tail are less developed.

"Grows to 4·20 inches (tail 2·1).

"Two specimens only captured near Tounghu."

Page 85, remove, "H. subtriedrus, Jerdon" to page 75, where it is briefly described.

Page 117, for "menurusla" read "melanarus."

Page 168, for "mucosas" read "mucosus."

The following Reptiles (non-Indian ones in italics) were collected by the late Dr. F. Stoliczka when on the Yunan Mission, and are recorded and

described by W. T. Blanford, Esq., in the Journal of the Asiatic Society of Bengal, Part II., No. 3, 1875, page 191:—

SAURIA.

Stellio Himalayanus ... ... Ladak.
S. tuberculatus ... ... Pir Pangal &c.
S. Agrorensis ... ... Jhilum valley in Kashmir.
S. *Sltoliĉzkanus* ... ... Plains of Eastern Turkestan.
Phrynocephalus Theobaldi ... ... Ladak, Kuenluen, Eastern Turkestan, Saricol.

Blanford considers this a distinct species with the following synonym :—

P. caudivolvulus Gunther *nec* Pallas.
P. Sloliczkai Steindachner.
P. caudivolvulus Pall apud Anderson.
P. Forsythi Anderson.

P. axillaris, W. T. Blanford .. Plains of Eastern Turkestan.
Teratoscincus Keyserlingii ... Eastern Turkestan.
Gymnodactylus, Stoliczkæ ... Ladak.
Cyrtodactylus Yarkandensis, Anderson ... Does *not* inhabit Yarkend !
G. elongatus, W. T. Blanford ... Gangihissar, Eastern Turkestan.
G. microtis, W. T. Blanford ... Eastern Turkestan.
Eremias Yarkandensis, W. T. Blanford... Eastern Turkestan.
E. caruleo ocellata, Anderson.
E. vermiculata, W. T. Blanford ... Eastern Turkestan. [Kashmir.
Eumeces tæniolatus ... Hills between Mari and
Mocoa Himalayana ... Mari-Kashmir.
M. Stoliczkai Stein.
M. Kargilensis Stein.
Eumeces Ladakensis Anderson.

Perhaps identical with E. Ladakensis Gunther, but in not one of 24 specimens, does the fore-foot reach the end of the snout.

OPHIDIA.

Typhlops porrectus (?) ... Between Mari and Kashmir.
Compsosoma Hodgsoni ... Kashmir.
Ptyas mucosus ... Kashmir.
Zamenis Ravergicri (coluber) ... Eastern Turkestan.
Tropidonotus hydrus .. Eastern Turkestan.
T. platyceps ... Mari and Kashmir.
Taphrometopum lineolatum ... Eastern Turkestan.
Vipera obtusa. Dwigubsky ... Kashmir (?)
V. Euphratica Martin.
Halys Himalayanus ... Mari and Kashmir.

DESCRIPTIVE CATALOGUE

OF

THE REPTILES OF BRITISH INDIA.

REPTILES proper (excluding BATRACHIA) are cold-blooded vertebrata, which undergo no metamorphosis, and breathe air by lungs, during their whole existence. They are divided into three orders—CHELONIA, SAURIA, and OPHIDIA.

ORDER CHELONIA.

Reptiles with bones of the thorax united into a solid shield. This shield is formed by the more or less complete anchylosis of the vertebræ and ribs, and is termed the carapace. In some families the thorax and sternum, or lower plate, are united into one bony case; in others, the union of thorax and sternum is cartilaginous only. Cervical and caudal vertebræ alone free and mobile. Occipital condyle single. Reproductive organ of male single, and lodged within the vesico-genital cloaca, with a seminal groove only; the urinary products being passed with the fæces per cloacam. Oviparous. Vent circular. Food—vegetable, animal, or mixed.

FAMILY TESTUDINIDÆ.

Terrestrial chelonians, with thick clubbed feet, adapted for walking on land. Herbivorous. Hind feet of some species partly webbed. Thorax and sternum united into a solid bony case. Sternum concave in males, flat in females. Habits terrestrial, only occasionally resort to water. Herbivorous. Eggs white, cylindrical, hard shelled.

TESTUDO, *Oppel.*

Caudal plate single. Toes five before, four behind. *(The Asiatic species have been separated by Gray under the generic name of Peltastes.)*

T. elegans. Schoepf.
T. geometrica, Hutton. J. A. S., vol. 6, p. 689, pl. 38.
T. megalopus, Blyth. J. A. S., vol. 22, p. 640.
T. stelluta Schw apud, Blyth. J. A. S., vol. 22, p. 640.

No nuchal plate. In many adults, the plates are elevated into prominent humps with corresponding concavities inside; colour black, with yellow areolæ, and yellow streaks elegantly radiating therefrom. In the young, the ground-colour is yellow. Areolæ of vertebral plates, central, of the costals, towards the upper margin, of the marginal plates in the lower posterior corner. Specimens rarely exceed 12 inches in length. Oviposits in November, laying four eggs.

Inhabits Peninsular India and Ceylon, but not Lower Bengal.

From Mr. Blyth's remarks it would seem that the character which mainly separates this species from *geometrica*—the absence of a nuchal plate—is a rather doubtful one, as specimens of *geometrica* presented from South Africa (*a* and *b* of my Catalogue of Rep. in Mus., As. Soc. B.) have likewise no nuchal plate. The identity of *geometrica* and *elegans*, if established, will considerably militate against Dr. Gray's arrangement of them under different sub-genera—(Chersonella and Peltastes).

T. platynotus, Blyth. J. A. S., B., 1863, p. 83.

No nuchal plate: aspect very like *elegans*, but the shell in adults remarkably flat; in the young and half-grown, arched and globose. Colour black, with yellow rays. The first vertebral and last costal plates 5-rayed. The last vertebral and first costal 7-rayed. Head yellow, with one large vertical and two large occipital shields. Pupil large, dark, with narrow brown iris. Specimens rarely attain 12 inches.

Inhabits Northern Pegu and Upper Burmah.

T. elongata, Blyth. J. A. S., B., 1853, p. 639.

Nuchal plate long and narrow. Colour of adults, pale yellow, black mottled, with no trace of rays, and in aged specimens very little black. Head yellow, with soft skin of eyes and nostrils pink. Two large frontals and a large vertical shield. Shell elongate, smooth, sides parallel in females, narrowed anteriorly in males. Length rarely exceeds 12 inches.

Inhabits Pegu and Tenasserim, growing slightly larger in the latter Province. It does not inhabit *India* as incorrectly stated by Gray in the Sup., Cat. S. R.

T. Leithii, Günther. P. Z. S., 1869, p. 502, f. 1, 2, 3.

Nuchal plate triangular. Shell broadly ovate, arched, the convexity of the upper shell stopping at the caudal plate, which is almost flat and forms a convex curve with the last vertebral. Plates smooth, but with concentric striæ distinct. Abdominals as long as the gulars, postgulars and pectorals together. Colour yellow, each vertebral and costal plate with a black margin in front and on the sides, but not posteriorly. Marginal plates black margined anteriorly. Sternum entirely yellow, with a broad cunei form longitudinal black band in the middle of each abdominal plate with its apex behind. Length 4·75 inches.

Inhabits Synd. Dr. Gray remarks that he "can see no difference between this and a young specimen of *Peltastes marginatus*" save in its brighter colouration.—Sup., Cat. S. R., p. 12.

HOMOPUS, *Dumeril et Bibron.*

Characters of TESTUDO, but claws four only on forefeet.

H. Horsfieldii, Gray. Cat. Tor. Croc., &c., 1844, p. 7.

H. Burnesii, Blyth. J. A. S., B., 1853, p. 642.

Testudo Horsfieldii, Gray. P. Z. S., 1861, p. 214.

Testudinella Horsfeildii, Gray. Sup., Cat. S. R., p. 12.

Nuchal plate narrow. Areolæ of vertebral plates behind the centre, of the costals in the upper posterior corner, of the lateral marginal plates in the lower posterior corner, whilst those of the hinder ones occupy the centre. Colour of young, dull yellow throughout; of adult yellow, with nuclei black; plates beneath

black, with yellow borders. Günther likens this species to *T. græca.* Length of Sir A. Burne's specimen in the Asiatic Society's Museum, 6 inches.

Inhabits Afghanistan, and according to Günther, Nipal, on the authority of a drawing belonging to Brian H. Hodgson, Esq.

MANOURIA, *Gray.*

Assuming the correctness of Dr. Anderson's views (P. Z. S., Lon., May 1871) the emended characters of the genus will stand thus.

General characters much as in TESTUDO, but with the caudal plate divided. Pectoral plates separated in males, but tangential to each other in females. Claws five before, four behind. Hind toes webbed.

M. emys Müll et Schl.
Testudo Phayrei, Blyth. J. A. S., B., 1853, p. 639.
Teetudo Phayrei, Blyth. Anderson, P. Z. S., May 1871.
*Scaphia Falconeri, Gray.** P. Z. S., 1869, p. 167.
Testudo emys Müll et Sch. Anderson, P. Z. S., Feb. 1872.
Scaphia gigantea, Gray. Cat. S. R., p. 18. (P. Z. S., 1873, p. 725) ! !

Nuchal plate broad. Four first vertebrals hexagonal; the last septagonal, owing to the double caudal. Vertebral and costal plates, with a central areola, surrounded by concentric striæ of growth. Colour of young shells dull, olive brown, with horny areolæ; of adults, wholly black. Grows to 20 inches length.

Inhabits Assam, the Naga Hills, Kachar, Arakan, the Malayan Peninsula, Java, Sumatra, &c.

Those who desire to follow the controversy which followed my identification of the type skull of Gray's genus Scaphia with the missing skull of Blyth's *T. Phayrei,* may consult the pages of the *Athenæum* for November 1870, and February and March 1871; the Proceedings, Asiatic Society of Bengal, 1874, p. 75; and the Appendix to the Catalogue of Shield Reptiles, p. 7.

GEOMYDA, *Gray.*

Shell with the general characters of TESTUDO. Sternum concave in males, flat in females, but with divided caudals, and hind toes webbed. Zygomatic arch none.

G. grandis, Gray. An. and Mag., N. H., 1861, p. 218.
Cyclemys platynota, Gray. apud Blyth. J. A. S., vol. 24, p. 714.

Nuchal plate triangular. A flat ridge along the vertebral line. Anterior margin of shell smooth, posterior strongly serrated. Shell above, very dark brown, almost black, rayed in the young; below handsomely black, and yellow rayed. Colour of animal pale muddy olive, profusely spotted with dull orange. Specimens attain to 18 inches in length. Old specimens are often eroded or overgrown with weeds from lying in marshes.

Inhabits Pegu, Tenasserim and Camboja—*vide* P. A. S., Bengal, 1874, p. 82. Oviposits in December in Pegu. Eggs strong, cylindrical. Four. Size 2·56 × 1·60. The habits of GEOMYDA are aquatic, as its webbed feet indicate; and specimens of *grandis* are often taken completely encrusted with weeds, the condition of the shell depending on the dry or marshy character of the spot, where the individual may have passed its life. But for its flat sternum, which I presume the males of *Emys trijuga* possess, I should be inclined to place *trijuga* in GEOMYDA, as the habits of the animals are so similar, and their structure also. In GEOMYDA there is no zygomatic arch; in MELANOCHELYS Gray, it is described as imperfect, but there is grave doubt if the skull figured by Gray (Sup., Cat. S. Rep., p. 34) as that of *Melanochelys trijuga,* really belongs to that species.

G. spinosa, Bell.

Nuchal plate triangular. Back flattened, keeled. Front and hind edges serrated. Costal plates with a sub-superior, posterior, areola, with a slight sub-conic tubercle. Colour above chesnut, below yellow, brown rayed. In the young, each costal areola armed with a distinct spine. Length of not fully adult shell, 8 inches.

Inhabits Penang, and stretches into Tenasserim, or even further north.

CHAIBASSIA.

Nov sub-genus.

Habit of GEOMYDA, but zygomatic arch complete.

G. tricarinata, Blyth. J. A. S., vol. 24, p. 714 (1855).

Geomyda tricarinata, Blyth.

Nuchal plate rather elongate. Jaws simple, not serrated. Vertebrals sharply keeled. Costals keeled superiorly, the keels parallel in front, but converging on the fourth costal. Shell broadest across the centre of the fourth costal. The two outer fore-claws small. Pupil black, iris umber brown. Colour of shell, above ruddy brown, deepening to blackish; below yellowish; the two colours sharply confined to the two surfaces. Keels and margin pale yellow. Head and neck, brownish, with an orange stripe from the nostrils over the eyes, and a paler patch towards the base of the mandible on either side.

Shell of male, 5·00 long, 32·5 broad, 2·25 high.
Shell of female, 6·50 long, 4·00 broad, 3·00 high.

Inhabits Chaibassa. The Naga Hills, North Assam.

Blythe's type was from Chaibassa. The two living specimens (for the examination of which I am indebted to the courtesy of J. Wood-Mason, Esq.) were forwarded by Major Godwin Austen from the Naga Hills.

I cannot agree with Dr. Jerdon's suggestion (P. A. S., B., March 1870) that the figure of *E. Belangeri* Less in the " Voyage aux Indes Orientales Rep., pl. 1, p. 291 (1834) represents this species; but concur with Günther, who regards it as representing M. *trijuga*. The colouration of the sternum is precisely that of M. *trijuga*, as distinguished from *G. tricarinata*. The present species may be readily distinguished from *trijuga* during life by the colours of its eye, the iris of which is brown, whereas the iris of *trijuga* is white. The fore-claws too in *trijuga* do not vary much in size, whereas the outermost fore-claw in this species may be almost termed minute, the next to it being also small; and this,

peculiarity is also seen somewhat exaggerated in Mr. Blyth's type. The zygomatic arch is well developed, as in most emydines, and therein differs from *Geomyda grandis*, in which the arch is wanting. Mr. Blyth's type was a male, and is slightly different in form from the living examples I have described; but I can detect no sufficient specific characters of separation; but not having the means of examining the skull, which has been carried to England by Dr. Anderson, I am unable to say if its zygomatic arch is complete or not; and in default of a comparison of skulls, I cannot separate the Chaibassa and Naga Hill forms. A female laid three cylindrical eggs, 1·75 long, by 1 inch broad. Should the skull of the type possess an imperfect zygomatic arch, it will then have to be placed in Geomyda, whilst the living specimens described now will remain under their present designation.

Family Cistudinidæ.

Fresh water chelonians, with feet webbed and adapted for walking or swimming. The sternum usually flat in both sexes. Sternum attached to the thorax by a ligamentous suture, and transversely divided into two mobile lobes. Food, vegetable or animal.

Cuora, *Gray*.

C. Amboinensis, Daud.

Nuchal plate oblong. Sternum divided into two mobile lobes, by a transverse ligamentous suture. Shell arched posteriorly. Colour above dark brown or blackish, with a pale vertebral line; beneath, pale primrose yellow, with a black blotch on the outer posterior angle of each plate, both ventrals and marginals. Sides of head with two yellow bands: the upper, from the nose over the orbit to the neck; the lower through the lower half of orbit and tympanum to the lower half of the neck. Grows to 10 inches.

Inhabits Pegu, the Malayan Peninsula, Camboja, Java, Sumatra, Amboyna, and the Philippine Islands. It is probably the most terrestrial in its habits of its family.

CYCLEMYS, *Bell.*

Thorax depressed, keeled, separated from the sternum by a ligamentous suture. Sternum flat in both sexes, divided into two parts by a transverse mobile pseudo-hinge, formed by the permanent non-anchylosis of the pectoro-abdominal suture, simulative of the cartilaginous joint of CUORA, and indicated in adults by a carious fossa across the external plates. In young specimens, this hinge remains undeveloped. Herbivorous. Food consists of fruits of Ficus, &c. Eggs large, cylindrical, four in number.

C. dentata, Bell (adult).
C. orbiculata, Bell (young).
E. dentata, Gray, Ill. Ind. Zool.
C. Oldhami, Gray Mss. apud Günther. Monog., p. 15, Pl. V. f. B.

Nuchal plate small. Shell in young orbicular, expanded, strongly keeled, strongly toothed posteriorly. Colour pale olive, radiately brown streaked from a large superoposterior granular, umbo, or areola, which in the marginal plates is postero-marginal.

Pupil round, black, iris, greyish yellow, brown spotted. Skin, of neck yellow, lined with brown, of body yellow. Specimens of this size 3½ inches, have no trace of the transverse sternal hinge.

Half grown ones of five inches have the sternum deep brown or blackish, yellow rayed, and the yellow iris much encroached on by brown spots. Sternal hinge distinct. Adults of eight inches are uniform brown with all markings effaced; keel obsolete. Iris wholly umber brown, and the sternal hinge now marked exteriorly by a carious line across the outer horny plates, the result of the motion of the unanchylosed hinge beneath them, *vide* Günther's fig. of *C. Oldhami.* Fingers slightly, toes broadly webbed.

Grows to eight inches, or rather more.

Inhabits Pegu, Tenasserim, and North-Western India, Camboja, &c.

Gray is wholly in error in his repeated assertions that the transverse sternal hinge is most mobile in the young, and that "the lobes are only moveable in the young state."—P. Z. S., May 12, 1863. The exact contrary of this is what really takes place. The oldest name is Buchanan Hamiltons Mss. *Dhor*, suppressed by Gray when copying B. Hamilton's figure, but adopted in his Supplement, Catalogue Shield Reptiles, page 23, where, with reference to the transverse pseudo-hinge of the sternum, he indulges in an imaginative record of a conversation between us on the subject. What I really endeavoured to convey, in a deferential manner, was, that inasmuch as I had convinced myself, as a matter of fact, by the examination of fresh and living specimens, of the correctness of what I asserted, the question of fact was, as far as I was concerned, beyond the pale of argument, *not* because I was afraid of being convinced by Dr. Gray, but because I knew myself to be in a position to correct *him*. I may add that in Günther's figure of the adult and aged *C. Oldhami*, the pseudo-hinge is indicated by a line along the sternum, and my assertion has besides received full corroboration by Dr. Anderson—see Proc. Zoo. Soc., 1872, p. 371.

A specimen of Cyclemys is recorded by Jerdon from the Sylhet district. 15¾ inches long in a straight line, but the species is not stated—*vide* Proc. As. Soc., Bengal, March 1870, p. 68.

PYXIDEA, *Gray*.

Shell much as in Cyclemys, with a lateral cartilaginous suture, but no transverse sternal hinge.

P. Mouhotii, Gray. An. and Mag., N. H., 1862, p. 157.

Nuchal plate much broader than long. Shell moderately elevated, with three strong longitudinal ridges, with rather flat interspaces. Anterior and posterior margins serrated.

Lateral ridges nearer the vertebral ridge than to the margin.

Colour yellowish, browner on the sides.

Günther remarks, "in a half-grown specimen the anterior lobe of the sternum appears to be slightly moveable, whilst it is entirely immoveable in the larger specimens."

Length 7 inches, and perhaps more in old individuals.

Inhabits Kachar (P. A. S., B., March 1870, p. 68) and Cochin China.

NOTOCHELYS, *Gray.*

N. platynota, Gray. Singapore.

This species has not hitherto been recorded from British India —*vide* Proc. As. Soc., Bengal, March 1874, p. 82.

FAMILY EMYDIDÆ.

Freshwater chelonians of small or medium size with sternum and thorax united into a solid case, without either lateral or transverse cartilaginous or unanchylosed divisions or joints.

Aquatic. Sternum flat in both sexes or feebly concave in the males. Feet webbed; claws five before, four behind. Habits active, carnivorous. Zygomatic arch complete.

BELLIA, *Gray.*

Shell solid, depressed, three-keeled in the young. Feet webbed; claws strong; five anteriorly, four posteriorly. Inner nostrils subanterior; zygomatic arch strong.

E. crassilabris, Gray. Cat., S. R., 20; P. Z. S., 1861, p. 140.
E. nigra, Blyth. J. A. S., B., 1855, p. 713.
Bellia crassilabris, Gray. P. Z. S., 1869, p. 197.

Nuchal plate very minute, triangular, with base in front plates variable in shape with age. Vertebrals much contracted behind, first 5-sided (Günther says triangular), second, third, and fourth 4-sided, mushroom-shaped in the adult; front side semi-circular as long as a side and base. In young shells the vertebrals are lozenge-shaped, quite unlike the adult form. Shell in adults depressed, keelless; in the young, three-keeled. Colour, deep clouded olive brown, tending to blackish above; and below without markings, but paler in spots. Grows to 7·50 inches.

Inhabits Tenasserim, Siam, and Sumatra. A scavanger in its habits.

The young only of this species are three-keeled, hence the character cannot be used as generic. Bellia is nearly allied to *Damonia* but the position of the inner nostrils is very different.

DAMONIA, *Gray.*

Shell solid arched; nodosely three-keeled in the young. Feet webbed; claws five anteriorly, four posteriorly. Inner nostrils "subcentral with a short oblong sunken space behind each." Zygomatic arch strong.

D. Hamiltonii, Gray.

E. Piquotii Less, in Belanger Voy. aux. Ind. Orien.

Shell oblong ovate, rounded with three longitudinal ridges, each plate of the vertebral and costal series being nodosely elevated in the young. Nuchal plate sub-triangular. Eleven marginal plates on each side. Ground colour brownish black, each vertebral and costal plate with a yellow spot in the middle of its areola; Three or four other spots on the margin radiately disposed. marginal and sternal plates similarly spotted. Head, neck, and limbs with yellow spots and dots. A pair of spots in front of the eye is very constant. Grows to 6 or 7 inches. The humped character of the young disappears more or or less completely in aged animals.

Inhabits Lower Bengal.

This is our handsomest emydine in India, and may be readily recognised by its yellow dotted colouration. Günther describes the head as covered with a "soft skin" whilst Gray makes a "hard thin skin" on the head, a generic character of *Damonia*—*non nostrum tantas componere lites;* but I have never remarked that amount of hardness or softness of the skin of the head of any of our emydines as would suggest its being usefully enlisted as a generic character.

MELANOCHELYS, *Gray.*

Zygomatic arch complete, but weak (not as described by Gray "*imperfect*"). Shell oblong, three keeled. Jaws simple, not dentate.

M. trijuga, Gray.

Nuchai plate narrow. Gulars large. Pectorals and abdominals sub-equal. Costals traversed by a keel placed high. Shell arched with a vertebral keel, very prominent on the fourth plate: shell slightly broader behind. Margins reverted at the side. Colour dark smoky blackish brown, with the keels and sides of the sternum brownish yellow. Head brown, paler about the eyes and tympanic region. Iris white. The individual from whom this description is taken was found in the Jumna canal. Length 4·75. Width across fourth vertebral, 3·25. Height 2·20. Grows to probably 8 inches.

Inhabits Continental India, The Punjab.

M. sebæ, Gray.
M. trijuga (Günther in part).

Colour brown, darker beneath, keels pale yellowish. Head red spotted. Grows to 7 inches.

Inhabits Ceylon and Southern India.

This species is very similar in general appearance to the last, but its spotted head at once serves to separate them. The precise range and limits of both are not as yet properly made out.

M. Edeniana, J. Anderson.
M. trijuga. (Theobald, Rep. of British Burmah, Lin. Soc. Jour., Vol. X).

Colour black. Keels and edges of the sternum yellowish. Colour of the animal dirty olive grey. Head yellowish without markings. Claws very long. Grows to about 12 inches.

Inhabits Arakan, Pegu, and Tenasserim.

A female taken near Tounghu, measured over the curves. 12·50, 10·50, 9·60.

This black giant race of the Eastern side of the Bay of Bengal has received the mss. name of Edeniana from Dr. Anderson in compliment to the Hon'ble Ashley Eden, who, with distinguished liberality, had forwarded a large collection of testudinata of the Provinces of which he was Chief Commissioner. Few of these

specimens are however at present available for examination in the Imperial Museum.

FAMILY BATAGURIDÆ.

Fluviatile or estuary chelonians, mostly of large size with solid shells, with the cavity of the thorax contracted at each end by an internal bony plate on each side. Sternum flat in both sexes. Food mostly vegetable. Feet webbed. Claws rather weak.

PANGSHURA, *Gray*.

Small sized Bataguroids, having the fourth vertebral shield narrowed anteriorly, or decanter shaped. Claws five before, four behind, feet webbed.

This genus is a very natural one embracing, at the time of publication of Günther's Monograph, five recognized species. Since then Jerdon has recorded another species, which, though probably only a local race of P. tectum, has been converted into a new genus JERDONELLA, by Dr. Gray. Another species has also been added by Dr. Gray, from a specimen obtained from Jerdon, but as that naturalist has not described it, its claim to specific rank seems open to question. P. Leithii Gray (Sup., Cat. S. R., p. 61) is also described from a skull which not improbably belongs to an animal of some other genus. The remaining four species have been ranged by Gray under three genera—PANGSHURA, CUCHOA, and EMIA, an arrangement which simply reduces zoological classification to a farce.

P. tectum, Bell.

P. tecta, Gray et auctorum.

Nuchal triangular. Thorax very angularly arched with a strong nodosity on the third vertebral. First vertebral pentagonal, shortest behind. Colours seasonally (?) very brilliant, dark brown or black with a bright orange or salmon red vertebral streak. Below brightly marbled with black and red. Head red spotted, neck yellow lined, and limbs yellow spotted. Grows to 7 inches.

Inhabits Lower Bengal.

Var intermedia, W. Blanford. J. A. S., B., 1870, p. 339.

General aspect as of typical *tectum*, but "the second vertebral almost hexagonal, the breadth exceeding the length slightly, the posterior margin straight, thus differing from typical *tectum* and *tentoria* in which it is convex. Fourth, diamond-shaped, not the ordinary 'decanter,' though this shape is more seen in aged specimens. The colouration also differs. Sternal plates black, the anterior and lateral margins, but not the posterior ones yellow. Limbs and head dull olive, paler below, the first unspotted; in this differing conspicuously from Bengal specimens of *tectum*." Largest specimen 4 long, 3·2 broad, 2 high.

Inhabits the Hasdo River a tributary of the Mahanadi above Sambalpúr.

Summing up Mr. Blanford remarks: "It is very clear these variations tend in a great measure to obliterate the distinction between *P. tectum* and *P. tentoria*, the only remaining difference being the more tumid form of the first named species, but I doubt if this be a more valid character than the form of the plates." With this conclusion I fully agree, and am inclined to extend its application to other species of the genus besides *tentoria*, in spite of the fact that they have been generically separated by so great an authority as Dr. Gray.

P. tentoria, Gray.

Batagar tentoria, Gray.

Cuchoa tentoria, Gray. Sup. Cat. S. R., p. 61.

Very closely resembles *tectum*, but "at all ages has the median keels of the first three vertebral plates much less developed, and the form of the whole carapace is conspicuously flatter and broader. The third vertebral plate is quadrangular, longer by half than broad, with the keel quite obsolete on the anterior half and but little raised posteriorly. Nuchal plate sub-quadrangular. A narrow black line is continued along the spinal ridge of *tentoria*, whereas the middle of the ridge is broadly white in *tectum*." Blyth. Colour above brown. Sternum blackish, brown with yellow margin. Grows to 8·25 inches.

Inhabits the Indus River and the Dekkan.

P. flaviventer, Günther.

Cuchoa flaviveutris, Gray. Sup., Cat. S. R., p. 61.

Resembles *tectum,* but the first vertebral is " bell-shaped." It is rather more elevated, having a large impression in the middle of the second and third costal plates. Nuchal plate broader behind. Colour: above uniform horny, the ridge lighter, the nodose prominences, darker. Lower parts uniform, yellowish, with a brown blotch on the lower side of each marginal plate. Grows to 11 inches. (*vide* Cockburn.)

Inhabits the Ganges near Allahabad.

P. Smithii, Günther. Monog., p. 36, fig. on p. 2.

Batagur Smithii, Gray. Sup.

Emia Smithii, Gray. Sup., Cat. S. R., p. 61.

Nuchal triangular. Shell ovate, depressed with a vertebral ridge rising into a nodosity on the back part of the third vertebral. The first vertebral is bell-shaped, the second sub-quadrangular, the third rectangular oblong, two-thirds as broad as long. Colour, above pale yellowish olive, with a black vertebral line; beneath black, with yellow margins to the plates, and with a yellow central keel dividing the two colours on the marginal plates. Grows to 8 inches.

Inhabits the Jumna, Ganges, and Punjab Rivers—Sutlej, Chenab, Indus, &c.

P. Sylhetensis, Jerdon. Proc., As. Soc., Beng., March 1870.

Jerdonella Sylhetensis Jerdon, Gray. Sup., Cat. S. R., p. 61.

Closely allied to *tectum* from which Jerdon distinguished it, not without hesitation. The last vertebral is broader,* behind those is *tectum,* its lateral suture coinciding with the anterior suture of the antepenultimate marginal. Gray thus sums up the differences which separate this animal *generically* and specifically from *tectum* and its allies. " This species differs from *P. flaviveutris* in the keel of the first three shields being pale—and not black, and much more indistinctly marked than in

* (Jerdon (*l c*) says *narrower*, but this is a clerical error, if we are to follow Gray's description. App, Cat. S. R., p. 18—.)

P. tecta, but is at once known by its strongly dentated margin, and by the three hinder marginal plates on each side only occupying the hinder margin of the fifth vertebral plate"—App., Cat. S. R., p. 19; or in other words *Jerdonella* is based on a specimen or variety, whose three hinder marginals are so narrow as to only occupy the space usually taken up by two and a half. Jerdon was undoubted nearer the truth when he hesitated to consider this form as ever specifically distinct from *tectum,* and doubtless the more varieties or local races are discovered, the more shall we be compelled rather to reduce the number of species, than to multiply genera! Grows to 8 inches.

Inhabits streams in Sylhet.

P. ventricosa, Gray. Sup., Cat. S. R., p. 60.

Thorax vertricose. First vertebral shield elongate, very narrow. Rounded behind, second narrow, attenuated behind, margin entire, third small, keeled, fourth elongate, oblong six sided suddenly narrowed and produced in front. Hab. India (Jerdon).

P. Leithii, Gray. Sup., Cat. S. R., p. 60.

This species is based on a skull from the "River Poonah," which, if not belonging to P. flaviventer, is probably referrible to some other genus.

Having enjoyed the advantage of examining a large series of specimens of Pangshura in the Allahabad Museum, through the courtesy of J. Cockburn, Esq., the Curator of that institution, I am led to believe that we have in India but three species of the genus, sub-divided into fairly recognizible races or varieties. In the first place, with a large series before us, we are forced to admit, that the shape of the plates is a very variable character, and of little use in discriminating species. Equally variable is the colouration of the sternum, the sternum of "flaviventer" being either uniform (as in Günther's type) or marked as in more usual in the genus. The form of the shell is perhaps a better mark and this seems to follow a geographical range. Taking P. flaviventer as our type, occupying as it does the centre of the area of Pangshura (so far as longitude goes), we find that the

forms with elevated shell of which "tectum" is the type preponderate as we go east, whilst the depressed form of the "tentoria" type replaces the others to the west, *e.g.*

P. tectum, Bell.

P. intermedia, W. Blanford.

P. Sylhetensis, Jerdon.

P. ventricosa, Gray.

These forms attain their largest size to the eastward, the Sylhet form reaching to 8 inches, whilst in Bengal 7 inches is a large size for a typical "tectum" to attain, whilst at Allahabad specimens of that size are never seen.

P. flaviventer, Günther.

This species grows to 11 inches, and occupies a central position about Allahabad. It is the largest of all the "pangshures," and the plates of the thorax are subject to great variation.

P. tentoria, Gray.

P. Smithii, Günther.

These are flat depressed forms ranging from the westerly parts of the Ganges to the Indus, where they replace the "tectum" type. Neither would seem to exceed $8\frac{1}{2}$ inches.

MORENIA, *Gray.*

Small sized Bataguroids, distinguished by an ocellated pattern of ornamentation; and of a restricted geographical range.

M. Berdmorei, Blyth. J. A. S., B., 1858, p. 281.

Emys ocellata, D. et B., Blyth. J. A. S., B., 1853, p. 645, 1855, p. 481.

Batagur ocellata. D. et B., Gray. Ann. Mag., N. H., 1857, p. 348.

Batagur Berdmorei, Blyth. Theobald, J. A. S., B., 1868, extra No., p. 12.

Nuchal plate oblong. First four vertebrals squarish, sub-equal, and slightly keeled. Second and third largest, broader than long. Shell high, round, and smooth, the reticulated pattern of the bones beneath, showing through the excessively thin epidermis. Sternum flat, obtusely but distinctly keeled, the outward shelving

side being three-fourths as broad as the ventral portion between the keels. Colour above pale, greenish olive, each costal with a dark spot, surrounded by a pale margin. The vertebrals similarly ornamented posteriorly, and obtusely keeled, more on the three front plates, and young. Beneath pale yellow, a yellow superciliary line from nose, and another below the eye.

Inhabits Pegu and Tenasserim, but not Bengal. Females grow to 8 inches in a straight line. Males being much smaller. Günther's description of *E. ocellata, D. et B.*, is taken from a specimen of the species, and he does not seem to be acquainted with the true *ocellata.* Gray describes the margin of the thorax as reddish (Sup., Cat. S. R., p. 63), but this colour is merely an adventitious stain.

This species abounds in Pegu, and when the grassy inundated plains dry up in March, and are swept clean by fire, the natives collect for food by hundreds, the scorched animals.

M. *ocellata, D. et B. Erpet,* General, II, p. 329, pl. 1561.
Batagur ocellata, D. et B., Gray. Cat. S. R., p. 36.
B. ocellata, D. et B., Theobald. Cat., Rep., As. Soc., Mus., p. 13. J. A. S., B., 1868.

Colour black, each costal plate with an ocellus placed rather low and formed by a narrow yellow line. Above the ocellus some irregular looped lines of similar color. Each vertebral with a narrow yellow mesial line. The four last vertebrals with a yellow linear horse-shoe mark with the ends directed forwards. The nuchal and each marginal with a vertical yellow median streak. Two vertical yellow lines from the nostrils to the lips. A curved line from the nostril to the gape. A yellow spot at the extremities of the mandible, with a paler continuation along the throat. A yellow line from the snout over the eye to the neck, and a shorter one below it, from the eye. An occipital yellow streak. In spirits the yellow is pale primrose, but during life was much brighter. Below uniformly yellow, dashed with dusky black on the sides. The specimen described was a male and measured 5 inches; females growing a little larger.

Inhabits Lower Bengal (but not Burmah).

BATAGUR, *Gray.*

Thorax and sternum united into a solid case. Sternum flat in both sexes. Toes five before, four behind, fully webbed. Shell depressed. Habits wholly aquatic. Food mainly vegetable. Eggs large, cylindrical numerous. Animal of medium or large size affecting the sea and estuaries as well as rivers. Flesh excellent as food.

B. kachuga, Buch., Ham.
Emys kachuga, Gray. Illust., Ind. Zool.
Emys lineata, Gray. Syn. Rep., p. 23.
Kachuga lineata, Gray. Sup. Cat., S. R.

Nuchal plate broad. Three anterior vertebrals squarish, the fourth much longer than broad, all keeled in young individuals, but the keel disappears with age. The hind margins of the post-gulars meet at an obtuse angle. The greatest depth of the shell is at the anterior portion of the third vertebral. Colour above uniform greenish olive brown. Beneath yellowish. Back of the neck pale brown, with seven red brown streaks. The side of the face and temple bluish. The chin with two yellow spots on the side. Grows to 24 inches.

Inhabits Bengal, Nipal, and the North-Western Provinces, Pegu and Tenasserim.

In the Proceedings, As. Soc., Bengal, for March 1874, p. 83, I inadvertently stated that this species does not occur in Pegu which is an error, though it does not affect my argument, as I had no skull of it in my collection, and the only specimens I ever obtained were a young one at Tonghu (shell only), and the aged specimen noticed by Günther in his Mon. Ind. Rep., p. 39, from Moulmein.

B. affinis, Günther. Monog., p. 40, pl. 3 f. c. c.
Kachuga affinis, Gray. P. Z. S., 1869, p. 203.
Cantorella affinis, Gray. Sup., Cat. S. R., p. 58.
E. trivittata, D. et B., apud Cantor.

Nuchal plate none. The first and second vertebrals broader than long Fourth not much longer than broad. All the verte-

brals smooth. Colour above yellowish green with three broad longitudinal black bands. Below yellowish. A large black blotch on the upper anterior angle of each marginal plate. Grows to 18 inches, and probably more.

Inhabits the Malayan Peninsula and probably ranges into Tenasserim.

B. trivittata, D. et B.
Kachuga Peguensis, Gray = female.
B. lineata, Gray. P. Z. S., 1861, p. 164.
Kachuga trilineata, Gray. Sup., Cat. S. R., p. 54.
B. dhongoka, Blyth.* J. A. S., B., 1863, p. 84.

A nuchal plate always present. Adult male, neck yellow, head covered with a smooth vascular skin, of a deep flesh red, fading instantly on death to a waxy white. On the forehead a black lozenge-shaped plate, elongate behind. Iris straw colored, blotched with reddish orange. Shell above pale olive green, with three conspicuous pitchy black bands down the back, sometimes united at their ends. Beneath pale orange yellow. Length 20½ inches.

Female. Skin uniform greenish olive. A black patch on forehead as in male, but no coloured vascular skin, shell above and below uniform deep umber brown, with no markings whatever. Length 23½ inches. Lays in January and February 25 eggs; weight of eggs 965 grains; length 2·60 inches. Oviposits in sandbanks towards and above the top of the tideway (as at Zalon on the Irawadi).

Inhabits Pegu and Tenasserim, *vide* Catalogue of Reptiles, British Burmah, in Linnean Society's Journal, Zoology, Vol. X.

Owing to the careless use made by Dr. Gray of the materials in his possession, and the habit he sometimes exhibits of relying for matters of fact, rather on his own inner consciousness than the testimony of others qualified to give evidence, there are few species in a more perplexing state than this. During my residence in Burmah, I procured but one specimen of a female, the one described by me in the Journal Linnean Society, Vol. X, p. 14,

the shell of which was purchased by the British Museum, and the head and feet of which in spirit also passed into Dr. Gray's hands. And on this head to the best of my belief, Dr. Gray based his *Kachuga Peguensis.* At page 55 of the Sup., Cat. S. R., 1870, Dr. Gray remarks under this head:—"A skull in the British Museum figured under the name of *Kachuga trilineata* (P. Z. S., 1869, p. 202, f. 13)," and further on, "there is a second skull in the British Museum received without the rest of the animal from Mr. Theobald figured in the Proceedings, Zoological Society, as *Kachuga Peguensis.* * * * On re-examination I am inclined to regard the differences between the skulls as *merely sexual* or *individual.*"

Now there can be no reasonable doubt of the correctness of the above admission of Dr. Gray as to the specific identity of his *trilineata* (*trivittata*) and *Peguensis,* or that the former species was based on the head of a male animal, whilst the latter was based on the head (in spirits) of the unique female specimen before mentioned. Yet when I suggest this, knowing that the skulls of but two 'Batagars' were in my collection, '*baska*' and *trivittata,* Dr. Gray, Appendix, 1872, p. 18, quietly shifts his ground and says:—"Mr. Theobald thinks that it (*Peguensis*) is probably an aberrant form of *Tetraonyx Lessoni,* or *Batagar trivittata* (P. Z. S., 1870, p. 676), but the figures I think show distinctly that this is a mistake," and apparently abandons the correct view of the identity of *Peguensis* and *trivittata* (*trilineata*) which he himself admitted in 1870, so soon as the same idea was put forward by myself!

Then again under *Kachuga trilineate* Dr. Gray quotes me to the following effect:—"The males have three pitchy-black bands on the back of the thorax, and the females which are much larger are all black." Sup., Cat. S. R., p. 55. Now, the sole female I ever saw or described, was the one in Dr. Gray's possession at the time and described by me in the Journal Linnean Society, Vol. X, in these precise words:—"*Shell above and below uniform deep umber brown, without any markings whatever,*" a description Dr. Gray had means—full means—of

verifying. For other remarks on this subject, see Pro. As. Soc., Bengal, March 1874.

B. dhongoka, Buch. Ham.
Emy's Duvaucellii, D. et B.
Dhongoka Hardwickii, Gray. Sup., Cat. S. R., p. 57, *not* Blyth. J. A. S., B., 1863, p. 84.

Nuchal plate triangular, broad behind. Form similar to *Kachuga*, but more depressed and expanded behind. Vertebrals keeled, the keel terminating on the second and third in a prominent elongate knob. The hind margins of the postgulars form a straight line, colour dark gray, with a black vertebral and two lateral stripes. A yellow line from the nostril to the upper part of the tympanum. Grows to 18 inches or more.

Inhabits the Ganges, Assam, Nipal, and Central India, and probably the Panjab.

Dr. Gray gives *Bay of Bengal, eastern side common,* and Pegu, and Moulmein as the habitat, but quite incorrectly, I believe. Sup., Cat. S. R., p. 57. In the first place Dr. Gray is wholly in error in quoting myself as his authority, thus "Pegu (Theobald)" as I never during many years' residence ever saw a specimen in Burmah, neither is the species included in my Catalogue of the Reptiles of Pegu. Dr. Gray then adds :—"It is not unfrequently brought to the Moulmein fish bazaar" (*l. c.*) No authority is given, but the words are an unacknowledged extract from a paper of Mr. Blyth, J. A. S., B., 1863, p. 84, and the statement requires careful consideration. The words occur under the head *dhongoka*, in a list of the testudinata of the Burmese Provinces, and the question arises, what is the *dhongoka* of the passage in question? It is first to be noticed that the allied *kachuga* (=*lineatus*) is not included in the list; but as this is not a common species in Burmah, it is not probably the one in question. *Blyth however quotes E. trivittata, D. et. B., as a synonym;* and as this is an extremely abundant species in Burmah, it seems reasonable to suppose that the *dhongoka* of the above list of Blyth, was really not the

dhongoka of Gray and myself, but *trivittata*, D. et B., apud me, *passim*, and the *lineata* (=*bilineata* and *Peguensis*) of Dr. Gray. No specimens of *dhongoka* from Moulmein or anywhere east of the Bay of Bengal existed in the Museum of the Asiatic Society at the date of my Catalogue 1868, and no specimen whatever of *trivittata*, D. et B. for comparison, so that it seems probable that Mr. Blyth identified from memory only, the 3-*striped* Burmese form '*trivittata*,' with the 3-*striped* Bengal representative species '*dhongoka*,' no specimens of which to my knowledge have to this time been received from Burmah. Dr. Gray adds it is an 'estuarine' species, which is also, I believe an error, as its habitat is away from the sea, as Dr. Gray might have inferred from the Habitat '*Nipal*.' In his monograph the usually accurate Gunther, cites only the Ganges, Nipal, and Assam, though from the fatality which seems to attach to Indian geography when touched on by English naturalists at home, he places 'Sooltanpore (Lahore)' on the Ganges (instead of on the Ravi, a tributary of the Indus), unless *Lahore* is a misprint for *Lahool*, only in that case the '*Sooltanpore*' in question happens to be on the Bias in Kulu, of which (and not of Lahool), it is the capital!

Dr. Gray also quotes a large specimen in the British Museum as coming from 'Moulmein' without specifying particulars, but very slight weight can attach to such an authority, when opposed to all that is positively known as regards the distribution of the species.

B. Thurgi, Gray.

Hardella Thurgi, Gray. Sup., Cat. S. R., p. 58.

Cachuga Oldhami, Gray. P. Z. S., 1869, p. 200.

H. Indi, Gray. Sup., Cat. S. R., p. 58.

Nuchal plate triangular. Shell depressed with an interrupted median ridge. Crown of head lead colored, mottled with yellow, lower jaw primrose. A bright yellow patch from nostrils to below eye, and a yellow line from nostrils to tympanum. Colour of shell uniform, deep brown, almost black, plates below, edged with yellow. Grows to 22 inches.

Inhabits Bengal, Indus river, &c. This specie is thoroughly herbivorous, although Günther infers the reverse, Gray correctly remarking (Sup., Cat. S. R., p. 58.) "The tortoises and turtles which have the broadest and most complicated chewing surfaces of the jaw are herbivorous or algivorous."

In his Appendix to the Cat. S. R., p. 18, Dr. Gray, quoting some remarks of mine on this species in my Catalogue of Reptiles in the As. Soc. Museum, *published in* 1868, sneers at me for not discovering that *Cachuga Oldhami* Gray figured in P. Z. S. and established in 1869 did not belong to it! For further remarks on this curious specimen of Dr. Gray's critical powers, see the Pro., As. Soc., Bengal, March 1874.

All the large Indian 'Batagurs,' '*baska*,' '*trivittata*,' '*Ihurgi*,' &c., are good and wholesome food, especially served as cutlets or soup. Their main food is grass or other vegetable matters, and their dung is expelled in masses resembling that of a donkey, only the matters are more crudely digested. The smaller species are less to be commended, as where the opportunity offers they act as scavengers, though this evil trait is possessed by nearly every domestic animal in India (fowls particularly), save the goat and donkey. The flesh of *Morenia Berdmorei* however I have found excellent eating.

B. dentata, Gray.

B. tentoria, Gray. *b* and *c*. Cat. S. R., p. 37.

B. lineata, Gray. *d*. Cat. S. R., p. 36.

B. Ellioti, Gray. P. Z. S., 1862. Günther Mon., p. 40 pl. 3 f., A-A.'

Young only known.

Nuchal shield broader than long. Second, third, and fourth vertebral shields strongly keeled and ending in an acute prominence. The hinder margin strongly serrated. Colour above uniform grey-brown. Beneath pale yellow. Head dusky brown. Temple and beak yellow, with a blackish streak from the nostril to the orbit, continued behind over the tympanum.

Inhabits the Kistna river, and the Jumna, according to Anderson. P. Z. S., Feb. 21, 1871, p. 150.

B. fusca, Gray.

Nuchal plate triangular. Shell indistinctly keeled and very broad behind. The first and second vertebrals nearly square, the third sub-hexangular broader than long; the posterior sides shorter. The fourth sub-hexangular, hinder side short and rather narrow behind, much longer than broad. Colour above brown, beneath yellow.

Inhabits India (Gray). Sup., Cat. S. R., p. 56.

Of these two species I know nothing beyond the meagre descriptions of them, and it remains I think to be seen how far both of these are distinct from 'lineatus.'

TETRAONYX, *Lesson.*

Characters of shell same as Batagur, but only four claws on all feet. It would seem to affect brackish waters and estuaries.

T. baska, Bu. Ham. mss., Gray. Ill. Ind. Zool.
Batagur baska, Gray. Günther Monog., p. 37, pl. 3 f. B-B.'
T. Lessonii, Dum et Bib.
T. longicollis, Less.

Nuchal plate sub-quadrangular. Four anterior vertebrals nearly as broad as long, fifth hexagonal, all smooth. Head covered with an undivided skin, nose upturned. Colour uniform pale brown. Grows to 24 inches.

Inhabits Pegu, Tenasserim, the Malayan Peninsula, and Bengal.

T. pictus, Gray. P. Z. S., 1862, p. 264.
Callagur picta, Gray. Sup. Cat., S. R.., p. 53.

Nuchal plate none. Inhabits Borneo. May perhaps range into Tenasserim.

FAMILY PLATYSTERNIDÆ.

Characters of the sole genus.

PLATYSTERNON, *Gray.*

Thorax and sternum united into a bony case. Shell depressed. Head very large, covered with a horny case. Tail very long, covered with rings of sub-quadrangular shields. Toes webbed. Claws strong, five before, four behind. Carnivorous.

P. Peguense, Gray. App., Cat. S. R., p. 70.
P. megacephalum, Gray? Theobald. Jour., Lin. Soc., Vol. X.

Colour of young (shell 2 inches) fleshy grey; each of the costal shields with a central black tubercle, beneath bright reddish orange, with a little black about the sutures. Iris pale yellow. Head dark mottled, with a black edged yellow stripe behind the eye. Grows to 14 inches of which the shell is five only.

Inhabits streams falling into the Sitang and Salwin Rivers.

Gray in App., Cat. S. R., separates the Pegu species from *megacephalum* from China.

It is possible that both species (supposing them to be distinct) may occur in Burmah, but our materials for deciding are very imperfect. The Pegu animal described above is said to be taken at night by men who are led to discover its whereabouts by a pretty loud noise which the animal makes somewhat resembling the cry of a puny fractious child, of the truth of which statement I have received undoubted corroboration. My specimen was given me alive by Sir A. P. Phayre, first Chief Commissioner of British Burmah, to whom it had been presented by some natives who hold these somewhat rare animals in considerable estimation.

Family Chitridæ.

Fresh water chelonians with three claws on all feet and *extremely weak lower jaws.* Feet webbed.

Chitra, *Gray.*

Shell depressed, with cartilaginous margins. Sternum united to thorax by cartilage. Sternal callosities four. Head elongate. Lower jaw very weak. Eyes placed very forward. The semi-diameter across the mandibular condyles is contained more than three times in the distance between the occipital condyle and the palatal opening of the nostrils. Affects estuaries as well as rivers. Young not ocellated.

C. Indica, Gray.

Testudo chitra, Buch. Ham.

Gymnopus lineatus, D, et B., Erpet, General II, p. 491.

Chhim or '*Sim*' of the fishermen in Eastern Bengal. '*Seuteri*' in the Upper Ganges.

Gray in his characters of the genus (Sup., Cat. S. R., p. 89, 1870) falls into the extraordinary error of describing the lower jaw as "strong," whereas it is a weak bony arch, no more than sufficient to give support to the horny rim or armature of the mandible in this family. General aspect of the animal as in Trionyx only a more depressed shell. Neck very elongate and capable of protrusion and retraction with lightning speed. Colour above dark olive brown, lineately marbled. Below yellowish white. No eye spots at any age.

The young exhibit the same pattern of marking as the adults and are devoid of 'ocelli.' Grows to fully six feet between tips, with a shell of over three feet and up to lbs. 240 weight.

Inhabits the Ganges, Bengal, the Irawadi, and the estuaries of the Indian and Malayan coasts.

This species can be distinguished from all allied forms except the next by its remarkably weak jaw, and from '*pelochelys*' by the proportions of the head. It is a most savage and desperate creature, and should be cautiously examined during life. Its food is unknown and probably differs from that of Trionyx to judge by its peculiar and weak jaw.

PELOCHELYS, *Gray*.

General aspect of *Chitra*. Sternal callosities four. Lower jaw very weak. Eyes placed very forward. The semi-diameter across the mandibular condyles is contained twice only between the occipital condyle and the palatalopening of the nostrils.

P. Cantorii, Gray.

Chitra Indica, Gray. Günther, I. R. form only the colours and marking form a life-drawing of *Chitra,* Sup., Cat. S. R., p. 91.

Dissimilar as are the proportions of the skulls of this species and *Chitra,* they are extremely alike externally. It is a very much smaller animal however, but specimens are scarce in collections.

Inhabits Arakan, Calcutta, Allahabad, "Malacca" (Cantor).

FAMILY TRIONYCIDÆ.

Fresh water Chelonians with three claws on all feet and powerful lower jaws. Carnivorous. Eggs, globular, calcareous.

TRIONYX, *Geoffroy.*

Shell depressed. Sternum united to thorax by cartilage. Sternal callosities in adults five, the anterior lunate one, only being developed in aged individuals.* Young either 'ocellated' or otherwise handsomely marked, which marks disappear with age.

T. Gangeticus Cuv. Reg. Anim.

T. hurum, Buch. Ham. and Gray. Ill. Ind. Zool.

T. gatajhal, Buch. Ham.

T. Javanicus, Gray. Ill. Ind. Zool., *vide* Anderson in Annals and Mag., N. H., May 1872 and September, p. 221.

This species is somewhat variable in its colour, and varies from light to dark green or greenish olive of various shades. The head is marked by radiating black lines, or by less regular anastomosing lines (as in Buchanan Hamilton figure of '*Hurum*') and is handsomely ocellated when very young, though young specimens are not so common as might be expected from the numbers of adults brought for sale to the bazaars. The skull is very stout and with a short facial profile. The palate broad and sunken with parallel sides, and the mandible with a very feeble median tubercular ridge on the inside, with two marked ridges

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* Homologous to the so called 'sternal pair.' Sup., Cat. S. R., p. 96 of Landemannia; the granulations occasionally spreading from two lateral points.

on the sides which just invade the masticating area of the jaw. In large individuals the lunate bone of the sternum is granular like the other plates, a character noticed by neither Günther or Gray, but present in a greater or less degree in old animals. Grows to probably 150 lbs.

Inhabits Bengal and the North-Western Provinces.

Cantor says also 'Pinang,' but I have been unable to verify its occurrence in Burmah, though from Cantors observing it to the south, I included it in my catalogue of Burmese Reptiles, and if Cantor was not mistaken, it no doubt must occur in the intermediate Burmese Provinces.

T. ocellatus, Gray. Ill. Ind. Zool.

T. Buchanani, Th. Pro. As. Soc., Bengal, March 1874, p. 78.

T. hurum auct. in part.

T. hurum B. H., apud Anderson, Annals, and Mag., N. H., 1872, Vol. IX., p. 382.

Kála kachim of the Bengali fishermen.

Skull more elongate or taper than in *Gangeticus*, with the mandible almost spatulate in front, and traversed inside by a median groove very strongly marked. Young handsomely eyed, and the species at all ages is marked by the transverse yellow bar across the nose in front of the eyes, and by conspicuous yellow spots on the gape and temples. General colour "green, darker on the occiput, where it is mottled with paler. Throat and neck plumbeous white. Eyelids red." Cartilaginous portion of carapace almost devoid of tubercles, save 3 or 4 indistinct ones behind. Osseous pittings of the sternal bones coarser than in *Gangeticus*, and the lateral plates more bent than is usually seen in other species. The above description was furnished me from life by A. Anderson, Esq. of Futtehgarh; the shell being figured by me in Proc. As. Soc., Bengal, 1875.

T. sewaare, Buch. Ham. (Young), Gray. P. Z. S., 1873, p. 50.

T. chhim, Buch. Ham. (adult ?).

Young animals closely resemble *ocellatus*, but have no yellow band across the snout, and the face is shorter, and the profile more like *Gangeticus*.

The adult (if the '*Chhim*' of Buch. Ham.) is rich olive brown uniformly spotted with small equal and equidistant lenticular spots, with their long axes arranged more or less longitudinally. Two yellow ragged blotches on the temples, but no band before the eyes.

Inhabits the Ganges.

T. stellatus, var Javanicus, Geoffrey, S. H. Siebold, Fauna Japonica, Chel., Tab. 5, f. 6. Theobald, Proc. As. Soc., Bengal, March 1874, p. 79, pl. 3.

T. Javanicus Schw., apud Günther in part not of Gray.

T. hurum, Gray. An. Mag., N. H., 1872, p. 366 as T. Phayrei.

'*Leikkway*' of the Birmese.

Head taper, mandible, inside furnished with a median ridge.

Head and neck grey, profusely yellow mottled. Shell brown with vermiculate markings in the young.

The specimen figured by me, l. c., was taken at Moulmein.

Inhabits Pegu, Tenasserim, and Java.

T. Phayrei, Th., Jour., Lin. Soc., Zool., Vol. X, 1868.

T. carniferus, Gray. Cat. S. R., p. 67, pl. 32 *not Aspilus cariniferus, Gray.* Sup. Cat., S. R., p. 102, f. 33.

T. cariniferus, Th. Pro. As. Soc., Bengal, March 1874, p. 80, pl. 4.

T. Jeudi, Gray. P. Z. S., 1869, p. 217.

T. formosus, Gray. P. Z. S., 1869, p. 217. (?)

T. Phayrei, Th. apud Anderson. P. Z. S., 1871, p. 154.

'*Leik-beywoon*' of the Birmese.

Skull of the general form of *Gangeticus.* Sternum excessively cartilaginous, the odd osseous plate being only well developed in aged individuals, *vide* Anderson, f. l. c. The *T. formosus* of Gray is not improbably the ocellated livery of this species. Adults brown handsomely vermiculately marked, very much in the style of *Chitra.*

Grows to over 24 inches in a straight line.

Inhabits the Irawadi, Tenasserim, and the Malayan Peninsula.

T. formosus, Gray. P. Z. S., 1869, p. 217, pl. 15, f. 1.
Nilssonia formosa, Gray. P. Z. S., 1873, p. 45.

My type specimen from Pegu was a young one, and its identification with the large skull of unknown origin on which Gray based the genus 'Nilssonia,' may prove erroneous.

Colour of young olive, with four very large black-eyed spots, the central spot circular, black with a narrow white margin (yellow?), surrounded by a dark brown ring, enclosed within an outer broad pale ring, with a narrow olive interspace between. Back ornamented with symmetrical dark reticulations. Beneath sooty. Head and neck olive, symmetrically ornamented with dark-edged yellow spots. A yellow spot on the temple, another behind the gape, with a second below it. A yellow spot on the throat, and the upper lip yellow dotted. A broad yellow collar, effused below and interrupted over the spine.

It is more than probable that this form is the young of one of the other Pegu species, though of which cannot be safely guessed at.

Inhabits Pegu.

T. Peguensis, Gray. Sup., Cat. S. R., p. 99.
Isola Peguensis, Gray. P. Z. S., 1873, p. 51, f. 5.

Head only known, brought from Pegu by myself. "Pale olive green, minutely and closely punctulated with black. The upper lip, lower part of the sides of the head, sides of the neck, chin, and throat uniform greyish white. The lower margin of the flap of the upper lip opaque white." Length 4 inches.

Inhabits Pegu (Tonghu).

T. Grayii, Theobald. Proc. As. Soc., Bengal, 1875.

Skull corresponds in general characters with the last, but the colouration is so different as to leave no question of their specific distinction. Head marked after the fashion of *T. Phayrei, Th.* whilst the granular osseous bones of the sternum are much more developed than in that species.

Inhabits Pegu.

EMYDA, *Gray*.

Shell similar to *Trionyx*, but with flexible flaps on each side of the posterior sternal lobe, and the margins of the shell strengthened with numerous small bony plates. Eggs spherical.

E. granosa, Schoep. Testud., p. 127, Tab. 30, A.B.
E. punctata, Gray.
Potamochelys, Gray. Skull. P. Z. S., Lon., Feb. 23, 1861, f. 7, 8.
The odd osseous plate of the sternum very small. Above pale greenish olive, with light yellow spots, which disappear with age. Grows to 12 inches.

Inhabits Bengal, North-Western India, the Punjab, and Bombay. P. Z. S., 1869, p. 501.

Oviposits in September, eggs 15—20. 25 mills in diameter, hard-shelled, weight 125 grains.

E. vittata, Peters. Monats, 1854, p. 216. J.A.S., 1870, p. 343.
E. Ceylonensis, Gray. P. Z. S., 1855, p. 201.
E. punctata, Kelaart. Prod. Faun. Cey.
Very close to *punctata*, but the odd osseous sternal plate is larger. Olive green, with indistinct brown stripes and minutely punctated. Beneath white. Head green, radiately black striped. Lips yellow. Grows to 13·5 inches.

Inhabits Ceylon, Central and Southern India.

Gray considers his specimens from Ceylon identical with the Goa species described by Peters. Sup., Cat. S. R., p. 117.

E. scutata, Peters. Monats, 1868, p. 440.
E. granosa, Sch. apud Theobald. Jour. Lin. Soc., Vol. X.
General appearance that of *punctata*, but no yellow spots on the back. Odd plate of the sternum large. 2 inches broad in a sternum of 7·5 long. Grows to 8 inches or more.

Inhabits Pegu.

FAMILY CHELONIDÆ.

Marine Chelonians with fins in place of feet.

CAOUNA, *Gray*.

Five pair of costal shields. Carnivorous. Unedible.

C. olivacea, Eschs. Zool. Atlas, Tab. 3.

C. olivacea, Gray. The Indian loggerhead.

Never less than fifteen vertebral and costal shields, but one or more may be subdivided so as to raise the number to twenty. Shields of the back strongly ridged in the young, which are black. Smooth in the adult. Lays in March and April over 100 eggs, spherical, white with a resilient skin. Diameter 1·55. Weight 625 grains, and repeats the process once or twice in the year, as I have extracted 260 unshelled eggs from the same female which had just deposited 103 mature ones. Flesh coarse to a degree.

Abounds in the Bay of Bengal, and is often unsuspiciously consumed as 'real turtle' by people who know no better.

CHELONIA, *Fleming.*

Four pair of costal shields only. Herbivorous. Edible.

C. virgata, Schw.

Easily distinguished from the last by having one pair less of costal shields. Its flesh is occasionally poisonous according to Sir Emerson Tennant, who quotes a fatal case in October due to its use.

Inhabits Bay of Bengal, where it is far less numerous than the last.

CARETTA MERREM.

Four pair of costal shields. Shields of back imbricate. Carnivorous. Unedible.

C. squamata, Bontius.

The tortoise-shell turtle. Head elongate, narrow, and upper jaw considerably beaked, whence its common name of 'Hawk's bill turtle.' Scales of back keeled and imbricate. Does not often exceed two feet in length.

Inhabits Bay of Bengal, Ceylon, &c.

DERMATOCHELYS, *Blainville.*

Shell sub-cordiform, covered with a coriaceous skin, and traversed by seven longitudinal ridges. Carnivorous. Unedible.

D. coriacea, L.

Colour above (alive) dark neutral tint, irregularly ornamented with white splashes as of whitewash. Ridges whitish. Below and beneath paddles, pale flesh colour, blotched with pale blackish neutral, which in the sternum takes the form of three longitudinal bands on each side of the mesial suture. Fore-paddle 39 inches. Hind-paddle 26. Head 12. Shell 66 inches over curve. Eggs spherical, 1·6, *vide* Tickell's Paper. J. A. S., Vol. XXXI, p. 367 with plate. Captured on the Tenasserim Coast of the Bay of Bengal, where it is rare. Bell says this species eats mollusca, fish, crustacea, as well as algæ. Tickell does not say he examined the stomach but inclines to the idea of its food, being vegetable which idea Gunther has apparently followed. I have preferred Bell's more precise observation to the contrary. Grows to 800 lbs. weight.

Very much yet remains to be done before our knowledge of the distribution of the Indian representatives of this Order of Reptiles can be considered as complete. At present great doubt exists as to the precise range of even the commoner species, and it is earnestly hoped that friends favorably situated, especially in Southern India, will give particular attention to the genera Batagur and Trionyx. When practicable, a good series of all ages of each species found in the district, of both these genera should be procured; and judging from the number of species of Trionyx met with east of the Bay of Bengal, several new species may, I think, be confidently anticipated to occur in India Proper, though from the difficulty of procuring these creatures, and their somewhat uninviting appearance to the superficial observer, they have hitherto enjoyed the advantages of inglorious neglect. Let us hope this will now cease, and that the hard-shelled Batagar, and the tender and wily Trionyx, will be in brisk request with local collectors.

Order SAURIA.

Scaled reptiles usually possessing eyelids and four external limbs. Rami of lower jaw connected by a bony suture. Limbs and eyelids never both absent. Urinary products passed per cloacam, the imperforate grooved penis acting as a copulatory organ only.

The second Order of Reptiles is divisible into two main sections, or sub-orders, as they might be termed. The first of which, though embracing the most powerful of living predatory animals, is still happily for man on the decline, and possesses no living representatives comparable with the huge dinosaurians of the secondary period. Formidable as are the grisly bear and the tiger, yet in its own element a crocodile is more than a match for either, and there are good reasons for supposing that even elephants are sometimes seized and drowned when crossing rivers infested by an unusually large individual, though on land seemingly authentic cases have been recorded of tigers destroying small crocodiles for food by springing on them when asleep, and dislocating the spine by bending back the head on the neck with their paws.

Section A. Emydosauria. (Water Saurians.)

Vent longitudinal. The generative organs single. Penis grooved. Oviparous. Inhabiting rivers, and occasionally the sea, near the shore, within the tropics especially near the mouths of rivers where free from rocks.

Family Crocodilidæ.

Back protected by long plates embedded in the skin. Tail compressed vertically for swimming. Teeth strong, conical embedded in sockets, and replaced from time to time by new teeth developed beneath and within the old ones. Vent longitudinal, linear. Habits predatory, aquatic, crepuscular, or nocturnal. Toes five before, four behind. Claws three on all the feet.

CROCODILUS, *Cuvier.*

The fourth tooth of the lower jaw fits into a notch in the upper jaw, so as to be visible, when the jaws are closed, the same teeth in *alligator* being received within a pit. Food—turtles, fish or carrion, the flesh of animals seized and drowned by them.

C. palustris Less.

C. valgaris var B. D. et B.

C. trigonops, Gray.

C. bombifrons, Gray.

C. biporcatus Cautley not Cuvier. As. Researches, Vol. XIX Tab., 3 f. 1—3.

Two pairs of anterior nuchal plates. Three pairs of large posterior ones all strongly keeled. Six rows of strongly keeled dorsal plates.

Colour pale olive, conspicuously black spotted. Grows to 30 feet.

Inhabits India and Ceylon. Common in lower Bengal. Rare in Pegu.

The largest head in the Calcutta Museum measures 29 inches. A head of 26·20 belonged to an animal 18 feet long and one of 24·60 to an animal of 12 feet.

C. porosus Sch.

C. biporcatus Cuv.

Anterior nuchal plates none or a pair of small ones. Dorsal plates in eight rows in the middle of the back. Colour same as the last, but easily distinguishable by its narrower and more pointed head. Grows to 30 feet.

Inhabits India, and is very common along the east coast of the Bay of Bengal. Very common in Pegu. Rare in Bengal. Breeds in June or July when it is a dangerous and aggressive animal attacking small boats which cross its haunts.

C. Pondicerianus, Gray. Ann. Mag., N.H., 1862, p. 268.

Anterior nuchal plates none. Dorsal shields in four rows (in the middle of the back only, in six). The type specimen figured in

Günthur's monograph was said to have come from Pondicherry, but I have the verbal authority of my lamented friend Dr. Stoliczka for the occurrence of the species at Akyab.

Gharialis, *Geoffroy.*

Snout very long and slender. Teeth slender, sharp. Food fish, also carrion, though they are not known to seize animals as crocodiles do.

G. Gangeticus, Gmel.

Dorsal shields is six rows in the middle of the back. Adult males have a large hollow hump at the end of the snout in which the nostrils are placed. The largest skull I have seen was close on 30 inches. Günther says it grows to 20 feet and animals rarely exceed this limit.

Inhabits Bengal and the North-Western Provinces, Ganges, and the Koladain river in Akyab but does not occur in Pegu.

Günther's idea that the hollow hump on the nose of the male is a provision to enable that sex to remain under water longer than the other, is open to considerable doubt. It would seem rather one of those sexual characters, the precise utility of which to the individual is obscure, as the horn on some male beetles.

Section B. Sauria. (Land lizards.)

Vent transverse. Penis bifurcate lodged in the thick part of the base of the tail, imperforate, erectile by eversion, and encircled by frills of horny scales, which vary in the different species and serve the purpose of preventing the retraction of the organs during congress, the vaginal chambers of the female, being correspondingly situated. Jaws toothed, the rami of the mandible being united by an osseous suture. Generally oviparous, though a few species produce living young. Food animal, a few only being herbivorous. No poisonous species are known.

Family Varanidæ.

Head covered with scale-like non-imbricate shields. Teeth acute, compressed. Tongue elongate, slender, double, teminating

in a long fork, retractile into a sheath at its base. Scales on back small, equal, on the belly squares in cross bands. Toes five, and claws on all feet.

VARANUS, *Merrem.*

The nostrils in an oblique slit situated nearly midway between eye and the extremity of snout. Scales elliptic, small subtangential. Tail vertically compressed, with a crest of keeled scales. Throat with a transverse fold. Claws five on all feet.

V. flavescens, Gray.

Nostrils nearer the nose than eye. Superciliary scales of unequal size, the outer being smaller than the inner. Scales of the upper parts strongly keeled, those of the belly smooth in 65—70 transverse series between the gular fold and loins. Colour greenish or brownish olive, with irregular dark markings, confluent into cross-bands on back and tail. Throat with irregular dark transverse bands.

Attains to four feet in length, of which the tail is more than half. Toes shorter than in its congeners.

Inhabits Bengal, The North-Western Provinces, The Panjab, and Birmah.

V. dracæna L.

Nostrils midway between the nose and eye. Superciliary scales small. Scales of the back not keeled : of the belly smooth in 85—95 transverse series. Colour brownish olive, black dotted, each dot formed of a single scale.

Attains to four feet in length, of which the tail is three-fifths.

Inhabits Bengal, The North-Western Provinces, The Panjab, Central and Southern India, Ceylon and Birmah.

V. lunatus, Gray.

Nostrils midway between the nose and eye. Superciliary scales small. Scales of back not keeled; of the belly smooth in 105 transverse rows. Colour brownish olive. Neck, body and tail with broad transverse bands the first formed by a dark streak from either eye meeting on the neck, the angle being

directed backwards on neck and forwards on the body. Sides and legs yellow dotted.

Inhabits the North-Western Provinces.

V. nebulosus, Gray.

Nostril nearer the eye than nose. A series of enlarged shields runs along the middle of the superciliary region. Scales of neck and back with an obtuse keel; of the belly smooth in 80 transverse rows. Colour reddish brown mingled with yellow, and yellow spotted. A few indistinct streaks about the nape and dark bands towards the end of the tail. Head yellowish. Grows to four and a half feet, of which the tail is three-fifths.

Inhabits Bengal and Birmah.

HYDROSAURUS, *Wagler*.

Nostrils rounded, near the extremity of the snout. Other characters as in *Varanus*.

H. salvator Laur.

Nostrils anteriorly placed. A series of enlarged shields covers the inner half of the superciliary region. Scales of the neck and back with a very obtuse keel; of the belly smooth in 90 transverse rows. Colour dark brown or brownish black. Limbs yellow spotted. Four transverse bands of yellow rings or ocelli across the back. Tail at base yellow and black mottled, and then posteriorly broadly black and yellow banded. Beneath yellowish; throat black spotted. Grows to nearly seven feet in length, of which the tail is three-fifths.

Inhabits Bengal, Ceylon and Birmah.

PSAMMOSAURUS, *Fitzinger*.

Tail rounded without keel. Other characters as in *Varanus*.

P. scincus Merr.

V. ornatus Carlleyle. J. A. S., 1869, p. 192.

Nostrils nearer the eye than nose. Superciliary scales small and granular.

Scales of the neck and back keeled; of the belly smooth; slightly raised in the centre, in 116 transverse rows. Colour olive greenish ashy, passing on neck into orange. Crown of head black, with lines of the same colour below and behind the eyes; down the neck also a median black line along the nape and some other less distinct lines and dashes on nose, neck and shoulders. Below white. Tail slightly more than half total length.

Length of type of the above description 29 inches, but doubtless grown larger as traces of ocelli indicative of nonage were observable.

Inhabits the North-Western Provinces and the Panjab.

The Varanidæ are carnivorous, not disdaining carrion, and are hence often seen about buildings in search of offal. They are esteemed however for food by the non-Aryan races and by many Europeans; and are often hunted for by dogs, whose scent enables them to discover their prey in the hollow trees or holes within which they habitually take shelter. They lay numerous eggs, in the rainy season in the ground usually selecting a deserted white ant's nest for the purpose. The eggs are whitish, cylindrical with tapering ends, two inches or more long, and of a leathery texture.

The young of all the species differ from the adults, by being much more brightly coloured and ornamented with streaks and ocelli which disappear with age.

FAMILY LACERTIDÆ.

Head covered with symmetrical shields. Tongue slender, free exsertile; tip forked. Scales of back granular or rhombic; of the sides granular; of the belly quadrangular or rounded, in transverse bands. No lateral fold, but usually one across the throat. Tail very long, with verticillate scales. Eyes diurnal. Tympanum distinct. Limb four.

TACHYDROMUS, *Daudin.*

Nostril usually in a single shield immediately above the labials. Eyelids distinct. Dorsal scales large, strongly keeled;

forming longitudinal ridges. Ventrals keeled. Femoral pores none. Inguinal pores, one or two on either side. Tail with rings of keeled quadrilateral shields.

T. sexlineatus, Daud.

Dorsal scales in four longitudinal rows. Ventrals, in six central and three lateral rows on each side, in all twelve longitudinal rows, and twenty-two or three transverse. Chin shields three pairs. Colour greenish bronze above, with sometimes a pair of silvery bands. Sides greenish, separated from the back by a narrow black line running from the nostril through the eye and tympanum. Beneath yellowish. Length fourteen inches, of which the tail is nearly five-sixths. Body 2·5; tail 11·5 = 14 inches in Günther's specimen.

Inhabits Kachar, Assam, and Birmah.

Stoliczka's Sikkim specimen had two nasal shields, *vide* J. A. S., 1872, part 2, p. 87.

T. Haughtonianus, Anderson. P. Z. S., Lon., Feb. 1871.

Dorsal scales in six longitudinal rows. Ventrals in ten longitudinal and twenty-seven transverse rows. Chin shields four pairs the last as large as the three anterior ones. Colour similar to *sex-lineatus*, but the back is darker, and the lateral green stripe broader. Tail, a trifle over, four-fifths of entire length. (type 2.3 + 5.9 = 8.2).

Inhabits Goalpara, Assam.

CABRITA, *Gray*.

Nasal shields swollen, variable in number. No collar, but a fold before the shoulder. Lower eyelid with a large transparent disk. Dorsal and lateral scales keeled, similar, in oblique rows. Ventrals quadrate, smooth, in longitudinal rows. Femoral pores. Colouration brown, not gray.

C. Leschenaultii, D. et B.

Nostril at the extremity of the muzzle ridge between two shields forming a suture with the rostral, and followed by two small post-nasals. Ventrals in six longitudinal and twenty-three

to twenty-seven transverse rows. Colour of head above dusky, of centre of back brown, bordered with black against a white line running from behind the eyebrows to tail. Sides brown, finely mottled with black, and bounded below with a second less distinct white line from the upper labials, through the tympanum, above the shoulder, to the thigh. Below, this between thigh and shoulder, is a black-mottled apple-green band. Lower parts white. Grows to five and a half inches, whereof the tail is seven-tenths.

Inhabits South-East Berár, Chánda, and Udipur, *vide* W. T. Blanford, J. A. S., B., 1870, p. 345. Coromandel Coast, Leschenault.

C. brunnea, Gray.

Nostrils at the extremity of the muzzle ridge between two nasal shields, followed by a smaller one.

Inhabits the Kavery valley in the Koimbator and Salem districts.

C. Jerdoni, Bed. Mad. Monthly J. of Med. Scien., 1874, p. 34.

Nostrils between three shields, one before, two behind. The prænasal large, articulating with the rostral or postnasal and præfrontal. A postnasal articulating with the first labial and the anterior loreal, and a second postnasal on the muzzle ridge articulating with the anterior loreal and præfrontal. Ventrals in twenty to twenty-four transverse rows. Colour much as in *C. Leschenaultii*. Grows to five inches of which the tail is seven-tenths.

Inhabits the Kavery valley, South-East Berár, the Southern portion of the Central Provinces, and Chutia Nágpur.

Acanthodactylus, *Fitzinger*.

Nostril between three shields, of which the lower forms the first labial. Eyelids present. A scaly fold across the throat. Femoral pores.

A. Cantoris, *Günther*.

Supranasals contiguous, præfrontal nearly square. Posterior frontals longer than broad, obtusely keeled. Superciliaries three

(the anterior one being small), and separated from the orbital margin by small scales. Two pairs of occipitals enclosing a very minute median one. Chin shields five pairs, the three first being contiguous. Scales on the back strongly keeled, imbricate, in thirteen longitudinal rows; on the neck very small. Ventrals smooth, square in twelve longitudinal rows. Femoral pores twenty on each thigh. Colour greenish olive above, with reticulated dark lines, below whitish. Length seven inches, of which the tail is nearly two-thirds.

Inhabits the outer hills bordering the Punjab.

A. Nilgherrensis, Jerdon. J. A S., 1853, p. 476, is probably a Cape species according to Jerdon himself,—P. A. S, B, March 1870, p. 79.

MESALINA, *Gray*.

Nostril on the ridge between three swollen shields, the lower and anterior moderate, hinder upper, small, triangular. Collar indistinct, sub-angular, attached in the middle, free on the side. No fold under the ears. Toes five on all feet Præanal single, with one or two series of small scales round it. Scales of the back rhombic or circular, not imbricate, of the belly smooth, contracted behind, arranged in oblique rows.

M. brevirostris, Blanford. Ann. and Mag, N. H., 1874.

Closely resembles *pardalis*, but the ventral shields are in 12 not 10 rows. Head short and high.

Inhabits the Indus valley near Kalabagh.

M. Watsonana, Stol. P. A. S., B., 1872, p. 86.

Præfrontal single, hexagonal. Postfrontals form a short suture. Superciliaries two on each side, margined externally by granular scales and parted from the postfrontals by a small triangular shield. Five occipitals, the anterior being pentagonal, the posterior triangular and separated by a small shield. Two loreals the first very narrow, the last larger, triangular. 9-10 upper labials, the fifth and sixth largest and beneath the orbit. 7-9 lower labials, the fifth or sixth largest and followed by much

smaller shields. Five pair of chin shields, the fourth largest. Ear spacious, margined above in front with a long narrow shield.

Scales above, granular in about 45 rows in the middle of the body, on the upper side of the limbs slightly keeled, on the tail, enlarged, verticillate, and sharply keeled. Shields of the belly enlarged, trapezoid in 8 rows.

Femoral pores 12-15 on each thigh separated in the præanal region. The lower eyelid granular with some enlarged flat shields in the centre. Shoulder fold well-developed. Colour brownish olive, with four alternating rows of white spots, with some blackish ones down the back, and one or two rows down the sides tending to form bands. A dark stripe behind the thigh and dark marks on the tail. Below greenish white.

Grows to 6·50 inches (tail 2·10).

Inhabits Synd.

My friend, W. T. Blanford, suggests the identity of this species and *M. pardalis Licht*, and it may be so, but *pardalis* is described as having "two transparent plates" on the lower eyelid, a character I cannot think Stoliczka would have overlooked when describing the "enlarged flat shields" of this species.

OPHIOPS, *Menetries.*

Nostril on the muzzle ridge between two or three swollen nasals, or more rarely in a single partly divided plate: two or three postnasals. Eyelids none. Collar none, only a small fold in front of shoulder. Scales of back keeled, imbricate, of belly smooth. Femoral pores. Tympanum distinct.

O. Jerdoni, Blyth. J. A. S., XXII, p. 653.

Pseudophiops Theobaldi, Jerdon. P. A. S., B., Feb. 1870, p. 71.

Scales of back in twenty-four to twenty-eight rows, all save the outer row sharply keeled. On the belly, six rows of enlarged smooth scales. Head shields plicated, rather variable. One anterior, two posterior frontals. Loreals two, the second large and separated from the eye by some small scales. Superciliaries large, two on either side. Eight upper and seven lower labials. Femoral pores ten on each thigh; pores pierced in the posterior

angle of the scales. Tail encircled with equal verticillate keeled scales. Colour variable. Bronze, with four rows of dark spots down the back, a well-defined pale streak separating the outer rows. A pale median streak is sometimes present. Stoliczka describes four white bands on his specimens. Two rows of black dots are also usually present. The type was from Mhow and measured. Body 1·5; tail 2·25 = 3·75 inches. Adult specimens reach to nearly five inches.

O. monticola Beddome. Mad. Monthly J. of Med. Scien.

Pseudophiops Beddomei, Jerdon. P.A.S., B., March 1870, p. 72.

"Nostrils lateral in the lower part of a large nasal shield, with two small postnasals, the lower one the larger, but both together not equalling the nasal: loreal region concave; loreals two, the posterior much the larger, and separated from the eye by several small shields, nine upper labials, the fifth very large and under the eye. Eight lower labials all nearly equal. Medial lower labial very large, six pair of chin shields (exactly the same as in *P. Jerdoni*, the three first pair forming a suture, the sixth very small. Anterior frontals one small pair about the size of the nasal or rarely three shields, the intermediate one being the smallest, rarely only two. Vertical, superciliaries, and occipitals as in *P. Jerdoni*; but the shield between the first occipitals is rather larger than in that species, and all the head shields are longitudinally plicated (as in *P. Jerdoni*) but more warty. Femoral pores 10 on each side, none in the præanal region, a single large præanal shield with a second one behind it about half its size (as in *P. Jerdoni*). Scales of the back in 25—62 rows, acutely keeled except in the two rows adjoining the abdominal scales. Keels more prominent towards and on the tail and forming continuous raised ridges. Abdominal scales large and smooth in six rows. Colour uniform brownish above, with sometimes a paler indistinct streak along each side of the back from the postoccipitals to the tail and a more prominent whitish streak along each side from the ear to the hind leg. Belly uniform whitish."

Inhabits the Brahmagiri hills in the Wynaad at 5000 feet and more sparingly the plains of South Kanara near Sulyay.

The synonyms quoted above apply either to individual varieties or local races. *O. Theobaldi* Jerdon has a linear shield intercalated between the posterior frontals, and is from the hills bordering the Punjab. O. *Beddomei* J. which is identical with *O monticola Bed.* is a form possessing two anterior frontals in place of the usual single one, and has been taken at the Bremnagherry hills by Beddome, and at Khandala by Stoliczka, who, after reviewing many specimens, is inclined to unite the above forms, with some reservation however as regards the last (*vide* Stoliczka, J. A. S., 1872, Part II, p. 89).

O. microlepis, W. Bl. J. A. S., 1870, p. 351, pl. XV, f. 1—5.

Gymnops, W. Bl. J. A. S., 1870, p. 351.

Chondrophiops, W. Bl. J. A. S., B., Part II, 1873, p. 144.

Nostril between two inflated nasal shields, with a third behind just separated from it.

Upper labials eight, the fifth enlarged and below the orbit; chin shields six pairs, the two first meeting. Scales of back strongly keeled, very small, smaller than, (and not oblique as) in *Cab. Leschenaultii*, fifty in each transverse row; of the belly rhomboidal in six longitudinal rows, whereof the outer are smaller than the rest. Two large præanals one before the other. Femoral pores fourteen on each side. Tail rather more than two-thirds of total length. Colour on head and middle of back gray, with dusky marks on sides, especially near a narrow white bounding line running from superciliary ridge to tail, where it is lost in a broader pale reddish band. A second less distinct white line runs from below the eye above the shoulder, fading behind. Below this on the sides a few green spots are seen during life. Beneath white. Total length is little over seven inches.

Inhabits Korba in Bilaspur, Central Provinces—Blanford; Western Bengal—Stoliczka.

O. meizolepsis, Stol. Proc. As. Soc., 1872, p. 124.
Gymnops meizolepis, Stol.

Form and proportions of the body quite similar to *meizolepis*, but the scales are larger and fewer.

Nostril moderately swollen between an upper and lower shield (the former in contact behind the rostral) and a third small postnasal followed by a small shield like a detached portion of the anterior loreal or præfrontal. A ring of small shields round the eye; 8 upper labials, the fifth under the eye and much narrowed at the lower edge. The eighth is in contact with an upper large and a lower small shield on the front edge of the spacious ear. Scales of sides and back keeled in 28 longitudinal and 45 transverse rows on the body between the fore and hind limbs. Colour olive green above with whitish dorsal edges accompanied by a series of smaller blackish spots on the inner, and considerably larger ones on the outer margins. A white band from below the eye through the ear, and above the sides to the groin, with dark spots or markings below it.

Grows to 4·70 inches (tail 1·50).

Inhabits the country south-west of Kalabagh.

FAMILY ZONURIDÆ.

Head covered with symmetrical shields. Tongue flat, nicked; scales of back and tail large, squarish, sides with a distinct longitudinal fold. Scales of the belly squarish or roundish, in cross bands. Tail rounded. Ears distinct. Eyes diurnal, with lids.

PSEUDOPUS, *Merrem.*

Body and tail long, snake-like. Limbless, or with only a pair of rudimentary hind legs. Scales quadrangular, arranged in transverse rows.

P. gracilis, Gray.
Ophiseps tessalatus, Blyth.

Body and tail of nearly uniform bulk throughout, with vent placed in the middle. Dorsal scales slightly keeled, in fourteen

longitudinal series. Ventrals smooth, in ten longitudinal series. (Blyth gives 8 for his *ophiseps*). Scales very lustrous. Colour above yellowish brown, with some, (during life) shining turquoise blue, spots irregularly distributed. Length fifteen inches.

Inhabits the Sikkim Himalayas. The Khasi hills, and Eastern Bengal (Anderson). Rangoon (Blyth).

Family Scincidæ.

Head covered with symmetrical shields. Tongue free, exsertile, bilobed at the tip. Scales of the back rounded, quincuncial, imbricate, of the belly and sides similar. No gular or lateral fold. No femoral or inguinal pores. Tail rounded fragile.

Section A, scales keeled.

Tropidophorus, *Dum et Bib.*

Scales strongly keeled. Tail rounded, the keeled scales forming series of spines. Nostril in a single small shield. Limbs four. Toes five.

T. Berdmorei, Blyth.

Aspris Berdmorei, Blyth. J. A. S., 1853, p. 650.

One very large anterior frontal, larger than the vertical. Two small triangular postfrontals, with their apices only touching. A large but narrow six-sided vertical. Two moderate anterior and two large posterior occipitals, enclosing a minute shield. Four very large superciliaries, with some small scales beneath. Upper labials six, the fourth largest. Lower labials four, the first largest. Keeled scales of the back form parallel ridges. Scales of belly smooth, with crenated margins. Limbs small. Colour pale olive brown, with rather irregular broadish *oblique*, transverse bars of pale red, black margined. Sides, throat, and tail white-spotted. Belly yellow. Body 3·50; tail 3·75 = 7·25 inches.

Inhabits Pegu and Tenasserim.

My specimens were captured among wet gravel in the stony beds of steams. The scales are duller and less lustrous than is usual in this family.

EUPREPES, *Wagler*.

Each scale with several keels. Tail rounded without spines. Nostril in a single small shield.

a—lower eyelid scaly (Tiliqua, Gray).

E. carinatus, Schn.

E. *rufescens*, Shaw.

Scincus, multifasciatus, Kuhl.

Tiliqua rubriventris, Gray.

T. carinata, Gray.

T. affinis, Gray.

Plestiodon Sikkimensis, Gray.

Scales three, sometimes five keeled. The præfrontal is generally separated from the rostral and vertical by the supranasals and postfrontals, but sometimes touches one of them. The fifth labial is under the orbit, and is much longer than high. Scales in 28 to 30 longitudinal, and between limbs 30, rows. Colouration variable. The prevailing hue is a rich olive brown or bronze, darker on the sides, and with a pale lateral stripe from over the eye down each side of the back. This lateral stripe is often white-spotted, or of a very pronounced yellow, and seasonally the sides are deeply suffused with red. The back is often black-dotted, or with a blackish streaks along the series of scales. Viviparous. Does not usually exceed eleven inches, of which the body is rather more or less than three-eighths. Günther notes specimens of sixteen inches, of which the body was six inches, whilst Stoliczka received one of twenty inches from the Andamans, of which the tail was nearly twelve. The largest specimens would seem to come from the east of the Bay of Bengal and its islands.

Inhabits Bengal, the North-Western Provinces, the Punjab, Central and Southern India, Ceylon, Arakan, Berar, and the Malayan Peninsula. The Andamans, &c.

E. Macularius, Blyth. J. A. S., B., 1853, p. 652.

E. rufescens, Shaw, young, apud *Cantor.*

Closely resembles *E. carinatus*, but the scales are five to seven keeled, and the species is a much smaller one, and of less stout

habit and shorter limbs. Colour pale bronze, black-spotted; spots long and streaky; from nose to tail a long black band, on either side, white margined above. Scales in 30 longitudinal, and 28 rows between limbs. Colours display the same seasonal variation as *carinatus*. Length of Indian specimens collected by Blanford. Body 2·1; tail 3·6 = 5·7; but I have seen Burmese specimens. Body 3·2; tail 4·2 = 7·4. This species was united with *carinatus* (*rufescens*) by Cantor, who regarded it as the young, but in addition to other differences, it is oviparous, whereas *carinatus* is viviparous.

Inhabits Bengal, Central India, Assam, Kachar, Arakan, Birmah, and the Malayan Peninsula, and is not unlikely co-extensive with *carinatus*.

E. trivittatus, Gray.

Closely resembles *carinatus*, but the head is shorter and higher. Scales with three median keels, with two indistinct lateral ones. Scales i[illegible]6 longitudinal, and 40—42 rows between limbs. Colour above olive brown, with three narrow equidistant greenish white bands, margined with blackish brown, with a lateral band below passing through the ear, all five bands continued less distinctly on the tail. Length. Body 3·25; tail 4·75 = 8·00 inches.

Inhabits Jaulnah, Central India (Jerdon); the Dekkan. (Stoliczka).

E. septemlineatus, Blanford. J. A. S., 1872, Pt. II., p. 360.

A smaller species than *carinatus*. Scales three keeled. Ear opening small, with two or three small lobules in front. Scales in 30 longitudinal, and 28 rows between limbs. Colour above brownish black, with seven equidistant narrow white stripes, three dorsal, the rest lateral, the upper lateral stripe running from the superciliaries, the lower from the upper labials. The stripes vanish on the tail. Plates of the head with pale margins. Hind legs white-spotted. Beneath white. A single specimen only taken, measures nearly four inches.

Inhabits South-Eastern Berar.

E. olivaceus, Gray. Günther Monog. I. R., p. 80.
Dasia olivacea, Gray.

A pair of small supranasal shields. The præfrontal forms a suture with the rostral and nearly touches the vertical. The fifth upper labial is below the orbit and not much longer than high. Ear small, nearly covered with scales. Scales with three or more slight keels, not denticulated behind and in 28-30 rows, both longitudinal and transverse. Præanals not enlarged. Subcaudals slightly enlarged. Colour above brownish with some 12 narrow irregular black transverse streaks, each black scale having a white spot. Below greenish olive. Young above black with silvery transverse bars. Head shields black margined, a black line from snout to ear. Tail scarlet.

Grows to 9 inches (tail 5·00).

Inhabits the Malay Peninsular. The Nikobars, &c.

E. novem-carinatus, Anderson. J. A. S., B., 1871, p. 12.

Scales nine keeled, the three central keels strongly marked. Supranasals form a suture behind the rostral. Præfrontals, postfrontals, and vertical meet in a point. Ear obliquely oval, with two or three prominent lobules. Scales in 32 longitudinal, and 42 rows between limbs. Colour above olive brown, with four or five narrow longitudinal black lines down the back. A deep brown band from the nostril over the ear down the side to the base of the tail, and above it a white band over the supercilium and along the back and another through the upper labials and ear to the shoulder. A faint broken blackish line from the gape to the shoulder, and three or four from behind the shoulder along the sides. Limbs with five black lines and scattered white spots.

Length, body 3.9; tail 4·3 = 7·2 inches.

Inhabits Mandelay, Upper Birmah.

The greater number of rows of scales, between the limbs besides other points of difference, distinguish this species from *carinatus, macularius, septimlineatus,* and *olivaceus,* and its coloration and greater number of keels from *trivittatus.*

b—Lower eyelid with a transparent disk (Euprepis, Gray).

E. monticola, Günth. Monog. I. R., p. 80.

Scales with two prominent keels, and sometimes an indistinct median keel as well. Opening of the ear rather small, with lobules in front. Scales in 35,36 longitudinal, and 34—40 rows between limbs. Upper and lateral parts greenish olive, with a light band running along each side of the back; back black-spotted; sides white-spotted. A white or yellowish black-edged streak below the eye continued to near the ear. Edges of eyelids bright yellow. Beneath yellowish white. Grows to 8·5 or more, of which the tail is 5 inches.

Inhabits Sikkim (probably the warm valleys), Jabalpur, The Punjab (Kalka).

E. trilineatus, Gray.

Scales with six or seven strong keels. Opening of ear small, with two or more elongate lobules in front. Scales in 30 longitudinal, and 28 rows between limbs. Colour yellowish brown, with three black-edged white stripes down the forepart of the back. Hinder part of back yellow-dotted. Limbs and tail and below reddish (seasonally).

Length, body 3·2; tail 4·0 = 7·2 inches.

Inhabits the Karnatic (Jerdon).

E. Beddomei, Jerdon. P. A. S., B., March 1870.

Closely allied to *trilineatus*, but has a shorter and more elevated head and shorter muzzle, the posterior upper labials being larger and higher; differs too by the median occipital plate being pointed, and not truncated behind, and by five pale bands extending to the base of the tail.

E. innotatus, Blanford, W. J. A. S., B., 1870, Part II, p. 354.

Opening of the ear not very small, with two or three small lobules in front. Scales with five (rarely three or four) well-marked equidistant keels. Scales in 32 rows longitudinal, and between limbs. Colour above olivaceous, sides purplish brown. A whitish line from the nostril along the superciliary ridge

halfway down the back, and another less defined from the tympanum to the shoulder. Sides of neck white-spotted, hinder-parts yellowish. Seasonally a red band from thigh to shoulder. From *trilineatus* and *Beddomei*, this species differs in its less numerously keeled scales and colouring.

Inhabits South-Eastern Berar.

E. longicaudatus, Anderson. J. A. S., B., 1871, p. 13.

Tail long and tapering two and a half times as long as the body (and head). A long narrow linear supranasal, not contiguous with its fellow. Posterior frontals form a broad suture. Ear opening moderate, without lobules. Scales with four to six keels, and in 30 longitudinal, and 28 rows between limbs. Colour of back and sides uniform, dark brown. Lower parts greenish white.

Length of body 1·4; tail 3·6 = 5·0 inches.

Inhabits Kachar.

Anderson likens this form to *monticala,* but without saying if the lower eyelid is scaly, as Günther erroneously states of that species.

E. Petersii, Stein.

Scales in 36 longitudinal rows; the scales of the back 2 keeled, of the sides faintly 2-3 keeled. Head flat above. Two concave loreals higher than long. Internasals not in contact with the rostral. Upper labials 7, the first four quadrangular; the fifth very long, under the eye. Ear opening broad and guarded by 3 or 4 prominent pointed scales. Colour above brown, with a yellow vertebral band (sometimes absent) and another, black marginal on the side. Some specimens with cross bands of black spots. A black and yellow line under the eye.

Collected at Chumba by F. Stoliczka.

Steindachuer likens this species to *monticola,* but supposing (from Günther's description) that that species had a scaly lower eyelid, uses erroneously that character to discriminate the two. Without, however, a comparison of specimens, I do not like to unite them.

RISTELLA, *Gray.*

Body and tail elongate sub-cylindrical. Lower eyelid scaly. Limbs four feeble, anterior with four, posterior with five toes. All toes provided with retractile claws, lying between two terminal enlarged shields.

R. Travankorica, Beddome.

Ateuchesaurus Travancoricus, Beddome. Mad. Monthly J., Med. Sci., 1870, p. 33.

Nostril nearly in the middle of a nasal shield. One loreal and one præocular separated from the eye by a few minute shields. Three or four minute shields at hinder angle of eye followed by regular scales. Upper labials six, the eye over the third and fourth. Scales on neck smooth, on the body two keeled. Scales in twenty-six longitudinal rows. Six on the back, and six on the belly somewhat larger. Colour dark fulvous brown, each of the six dorsal scales with a median black streak forming black lines continued on the tail. Sides blackish, with small white spots. Below yellowish white-black, spotted on chin and throat. Tail below variegated, with black and yellowish white. Length, body 1·50; tail 2·12 = 3·62 inches.

Inhabits the Western Ghâts (Beddome).

In redescribing this species as a *Ristella* in the Mad. Monthly J. M. S., 1871, p. 195, Major Beddom forgets to mention that its generic position was pointed out to him by Stoliczka (*vide* J. A. S., 1872, Part XII, p. 129).

Section B. Scales smooth.

HINULIA, *Gray.*

Lower eyelid scaly. Supranasal none.

H. INDICA, *Gray.*

The single præfrontal touches both rostral and vertical. Four superciliary shields, followed by two smaller ones. Ear large, without lobules in front. Tail with enlarged subcaudals. Colour above bronze brown, sometimes olive tinged, uniform

or with a few scattered dark spots. Sides dark banded, indistinctly margined above with white, and passing below into dull brown marbled with paler. Sides of tail greyish brown, with an upper dark edge and darker marbled, with a few pale spots and indistinct stripes. Below greenish white. Limbs and tail during life a pale fleshy brown. Grows to ten inches, of which the tail is two-thirds. Scales round body thirty-eight rows, between axil and groin forty-six.

Inhabits Sikkim, Bhután, Assam, and Birmah.

H. maculata, Blyth.

Lissonata maculata, Blyth. J. A. S., B., 1853, p. 653.

The single præfrontal touches both rostral and vertical. Five rather tumid superciliaries. Vertical much narrowed behind, almost ending in a point, followed by two pairs of occipitals, the hinder being separated by an elongated shield. Colour above brownish olive or pale bronze, with two series of black dots. A dark band along the sides, from the rostral, evanescent on the tail, and margined above and below with a pale streak continued, with scalloped or undulated margins to the tip of the tail. The sides in adults grey marbled. Below whitish. Scales round body in thirty-six, between axil and groin in ninety-six rows.

Length, body 2·75 ; tail 4·00 = 6·76 inches.

Inhabits Rungpur (Blyth), Pegu (Theobald), Martaban (Stoliczka), and the Andamans (Tytler).

This is very close to *Indica* a stouter and larger form, but in this species, the scales between the fore and hind legs are in 96 rows, whilst in *Indica* they are according to Günther only in 46.

H. Dussumierii, D. et B.

The single præfrontal touches both rostral and vertical, but only just separates the posterior frontals. Superciliaries five, much swollen, followed by two small shields. Ear a long vertical slit, without lobules in front. Colour fulvous, olive-tinged in front, reddish posteriorly, with two sub-marginal black bands, partially broken up and becoming obsolete on tail. A metallic greenish white line from superciliaries along the sides of the

back, distinct on neck, but fading on tail, which is reddish. A black band from the nasal through the eye along the side to near the end of tail, with a narrow white border below, behind the eye, with a second black streak below, posteriorly, near the vent. Below greenish iridescent white. Legs above olive brown darker marbled and with indistinct fulvous spots. Scales round body in 40 rows, between axil and groin in 76.

Length, body 1·87; tail 1·87 = 3·74 inches.

Inhabits Malabar (Dussumier and Beddome).

H. Taprobanensis, Kelaart. Prod. Faun. Zey., p. 21.

The single præfrontal forms a suture with the rostral. Præfrontal, postfrontals, and vertical meet in a point. Four superciliaries. The anterior occipitals sometimes united into one shield. Two loreals. Ear with two very small lobules in front. Colour brown, above with a light band running from above the tympanum along the side of the back, sides black. Lower parts yellowish. Some individuals have the head and throat dark greenish blue, with numerous white dots, in others these parts are uniform brown.

Length, body 2·0; tail 3·5 = 5·5 inches.

Inhabits Newera-ellia, Ceylon.

MOCOA, *Gray*.

Lower eyelid with a transparent disk. Supranasals none.

M. Sikkimensis, Blyth. J. A. S., B., 1854, p. 652.

Superciliaries four. Posterior occipitals about twice as large as anterior ones. Three or four pairs of elongate transverse shields behind the occipitals. Seven upper labials, the fifth under the eye, not much elongated. A pair of large præanals. Scales in 24 longitudinal rows; between axil and groin 46. Hind foot three-fifths the space between the fore and hind limbs. Colour bronze brown, either uniform, or with from three to five irregular series of dark brown dots. Sides blackish brown, margined above with an indistinct pale line; sides white-spotted especially below. Body 2·00; tail 3·25 = 5·25 inches.

Inhabits Sikkim, between 3,000 and 10,000 feet.

M. Himalayana, Günther. Monog. I. R., p. 86.

Closely allied to *Sikkimensis*, but the scales are in 26—28 longitudinal rows, and between axil and groin 48—50. The scales of the sides are slightly smaller, and the limbs more slender, than in *Sikkimensis*, and the ear and transparent disk are larger. A pair of large præanals. The posterior frontals are more developed almost meeting the anterior frontal and the vertical in a point, while in *Sikkimensis* the two posterior frontals always remain well-separated. Colour above greenish olive, with a few interrupted series of dark and whitish dots. A dark lateral band from the nose through the eye, margined above with white and more broadly below, from the orbit to the thigh. Below greenish white. Length four inches, of which the tail is half.

Inhabits Gurhwal, the Western Himalayas, and Kashmir.

M. Schlegelii, Günther. Monog. I. R., p. 86.

Very close to *Sikkimensis*, but described as having *striated* scales in 25 longitudinal and 35 transverse series. Four præanal shields, the two central largest. Colour above uniform black. Beneath blackish.

Inhabits Sikkim, between 8,000 and 9,000 feet according to the brothers Schlagintweit.

M. sacra, Stoliczka.

Head shields as in *Sikkimensis*, but the postnasal scarcely reaches the top of the head, and the fifth upper lable is longer. Ear in front with three equal lobules, one pair of large præanals. Habit slender. Scales in 22 longitudinal row, and between axil and groin 40 rows. Hind foot two-thirds the space between the fore and hind limbs. Colour light bronze brown, with a few dark brown spots scattered on the head and body, each dark spot accompanied by one or two indistinct pale spots. A narrow black band from the nose through the eye, above the ear fading towards the belly; margined superiorly with white. Labials spotted with darker. Beneath greenish white.

Body 1·37; tail 2·00 = 3·37 inches.

Inhabits Parasnath hill in Western Bengal.

Very close to *Sikkimensis*, but of a more slender habit and with longer hind feet.

M. formosa, Blyth. J. A. S., B., 1853, p. 651.

No enlarged præanal shields. Form robust.

Colour olive green, with dark lateral bands, pale margined above, the dark bands speckled with greenish white, the paler bands with black. Between the pale bands, down the nape and body run five narrow black lines, variegated with angular greenish white spots. Limbs minutely pencilled with black and spots and streaks of the same on the head.

Length, body 3·50; tail 3·50 = 7·00 inches.

Inhabits Mirzapur, North-Western Provinces, and Wazirabad in the Panjab.

M. bilineata, Gray.

Head much as in *Sikkimensis.* Front margin of ear with a pair of tubercles, not denticulated. A pair of large præanals. Scales in 24 longitudinal, and between limbs in 44 transverse rows. Colour brownish olive above, greenish white below. A broad dark band runs from the nostril to end of tail, enclosing below a whitish lateral line. A pair of black lines from the nape along the back in adults, wanting in the young. Length 5 inches, of which the tail is half.

Inhabits the Nilghiri hills, towards their summits, under stones.

M. Travankorica Bed. Mad. Mont. J. Med. Sc., Jan. 1870, p. 34.

"Supranasal shield none. The lower eyelid with a round transparent space. A single præfrontal is in contact with the rostral as well as the vertical. Four superciliary shields with a pair of very small shields between them and the eye. Anterior occipital single, or rarely double, a diamond-shaped shield between the upper part of the posterior pair of occipitals. Ear without tubercles or denticulation. Vent with a pair of large

anals, sub-caudals broad. Scales in 22 longitudinal series. Limbs feeble. The fore legs extend nearly to the eye, the hind leg rather more than half way to the axils of the fore. The fourth hind toe is a quarter or a little more shorter, than the third. Greenish olive above and very shining. A narrow black band sometimes broken into spots down the centre of the back disappearing on the tail and irregular or wanting on the neck. Sides blackish; belly pearl coloured; tail bluish beneath; the black band down the back is sometimes entirely absent."

Inhabits the Travankor hills, and the Wynaad.

M. Stoliczkæ, Stein. Reise der Novara. Rep., p. 45.

Ear opening longish with 3—4 very small scale-like tubercles, prominent and rounded off, the central largest. Four superciliary plates. A pair of front occipital plates. Eight upper labials. The sixth under the orbit larger than the fifth, but smaller than the seventh. Loreal region concave. Scale small in 34 longitudinal rows. A pair of very large anal plates. Tail rounded with a row of enlarged plates below. The two central rows of ventrals somewhat enlarged. Colour of back brownish dark green, with reticulated black lines or seven interrupted longitudinal rows of very small black spots, or in young specimen the back is spotted pale with dark margins to the spots. Sides bluish green near the rump. Belly brownish grey, or yellowish white. The scales are dark edged as in *Himalayana.*

Inhabits the Spiti valley at 12,000—14,000 feet. Teste Stoliczka.

M. Blythii, Stein. Reise der Novara. Rep., p. 46.

Scales in 30 longitudinal rows. Ear with several small rounded scales in front. Upper labials 7; the fifth which enters the orbit is four cornered, longer than high and nearly twice as long as each of plates before it. Two large anals. Back brown with three narrow blackish bands and numerous squarish bright spots, each accompanied by a similar black one. A blackish broad band margined above and below with white, on each side of the

rump and a black band again beneath, sometimes white spotted. A black line with a white inferior border, below the eye.

Inhabits the Wangu valley, teste Stoliczka.

M. Kargilensis, Stein. Reise der Nov. Rep.

This species is very nearly related to *M. Stoliczkæ* and differs chiefly in this, that the fifth upper labial touches the lower edge of the eye. In two small specimens there are 32, in the two larger 34 longitudinal rows of scales. On the front edge of the ear opening lie 1-3 prominent scales tubercular in form, of which the topmost is by far the larger. A black band at the side of the body; several rows of bright blue spots between two black rows on the back; belly bright blue, often with a dark enclosure of scales. Normally only 7 upper labials. The præfrontal plates separated from each other.

Inhabits Kargil, teste Stoliczka.

E. macrotis, Fitz. Reise der Novara. Rep., p. 48.

Ear-opening very wide, circular, without projecting scales; nasals extending over the top of the snout, separated from each other; rostral strongly developed, prominently convex on the hinder edge, præfrontal concave in front convex behind and in contact with the acute anterior angle of the vertical; two præ-occipitals: a tolerably large central occipital; two large anal shields; 31 scales round the body. Back brown, a deep black longitudinal band on each side of the trunk; abdomen yellowish white; six longitudinal rows of shields on the back between the black lateral lines.

Inhabits the Nikobar Islands.

MABOUYA, *Fitzinger.*

Scales smooth. Lower eyelid with a transparent disk. Supranasals two. Ears moderate, simple. Toes five on all feet, elongate. Body fusiform.

M. Jerdoniana, Stol. J. A. S., 1870, p. 172.

Habit slender. Fore leg reaches a little beyond the eye. Hind leg nearly reaches the fore. Posterior frontals form a very narrow

suture. One narrow elongated supranasal on each side. Two or three loreals and four præoculars. Seven superciliaries, prominent and strongly arched, but the superciliary edge formed of ten smaller scales. Nostril large rounded. Eight upper labials, the sixth largest, below the eye. Eight lower labials, the shields adjoining being enlarged. The first chin shield single and largest. Scales round the body in 37 rows and in 60 transverse rows between the fore and hind limbs. Subcaudals conspicuously enlarged. Under a lens many of the scales of the back are seen slightly longitudinally grooved.

Colour uniform iridescent brown above. Most of the scales pale spotted. An indistinct pale band down each side of the back. Below yellowish white, leaden grey on the tail.

Grows to 7·20 inches (tail 4·00).

Inhabits Pulo Tickos near Pinang.

I give a condensed description of this species, which is not strictly Indian, in order to facilitate the recognition of any other species of the genus which may hereafter occur within our limits.

BLEPHAROSTERES, *Stoliczka.*

Scales smooth. Head shielded much as in *Mocoa.* Nostril in a single shield. Eyelid none. Subcaudals entire.

B. Grayanus, Stol. Proc. As. Soc., B., 1872, p. 74.

External ear none.

Body slender. Snout obtuse. Two rows of small shields round the anterior upper and posterior edge of the eye. Scales in 18—20 longitudinal rows and 36-38 transverse rows between fore and hind legs. Seven upper labials, the fifth under the eye.

Colour above olive green, with a metallic lustre, darker on the sides, where speckled with black, and passing on the belly to greenish white. A silvery band black edged below, from the superciliary edge to the tail which is paler, with a pink blush. Limbs brown olive with rows of white spots.

Length 2·80 inches (tail 1·65).

Inhabits the Wagar district in North-Eastern Kach.

B., agilis Stol. Proc. A. Soc., B., 1872, p. 126.

External ear-opening distinct, a little above the level of the angle of the mouth, with two small denticles on the front edge and separated from the last upper labial by two enlarged scales.

Body slender but less depressed than in *Grayanus* and with the tail very much longer than the head and trunk. A nearly complete ring of minute scales round the eye. Scales on 21—22 longitudinal rows and 45—50 transverse rows between the fore and hind limbs.

Colour above greenish olive, with or without dark spots on the back, but more distinct ones on the tail. Edge of back iridescent white. Scales pale greenish with a dark band from the eye to the shoulder, thence narrowing behind. On the sides three or four dusky longitudinal stripes broken up into spots on the tail with white spots alternating. Below white. Limbs pale yellowish brown striped above, uniform below.

Grows to 3·40 inches (tail 1·3).

Inhabits the country South-west of Kalabagh.

This species differ from *Grayanus* by its external ear and by a larger number of transverse rows of scales.

Günther considers *Ablepharus pusillus*. W. Bl. Ann. and Mag., N. H., December 1874, p. 461, as identical with this species and refers both to *Ablepharus Brandti Strauch.*

RIOPA, *Gray.*

Body long, limbs feeble.

Section A. Lower eyelid scaly.

R. albopunctata Gray.

Tail large and cylindrical, which, with the feeble limbs, gives a snake-like look to these small but active lizards. Scales in 26—28 longitudinal rows, and between 50—60 transverse. Colour uniform brown above, or with the six median rows of scales, black-dotted, forming fine lines down the back and tail. Margins of back sometimes pale-coloured. Sides purplish black with conspi-

cuous white spots. Beneath whitish. Limbs black-spotted. Body 2·50; tail 2·00 = 4·50 inches.

Inhabits Southern and Central India, Bengal, Assam, and Birmah.

R. lineolata, Stoliczka. J. A. S., B., 1870, p. 175.

Closely allied to *albopunctata*, but tail longer than body. Superciliaries five, the last small and tumid, occipitals four, the anterior pair being united; the median one smaller, much smaller than in *anguina;* larger than in *albopunctata;* six lower labials elongate and narrow. Scales in 24, 25 longitudinal, and 60—65 transverse rows Colour greenish iridescent brown above, with an almost continuous series of small dark brown dots on each side of the back from the nape, margined above and below by a pale line. The centres of all the dorsal and lateral scales are paler than their edges, giving rise to straight longitudinal lines. Tail reddish.

Length, body 1·50; tail 2·00 = 3·50 inches.

Inhabits Martaban.

Section B. Lower eyelid with transparent disk.

R. Hardwickii Gray.

Very closely allied to *albopunctata*, but the scales a trifle larger. The hind limb is one-fourth the length of the body, in the last a trifle less. Scales in from 24—26 longitudinal rows, and between limbs in from 48—56. Colour variable. Back and sides purplish black. The edges of the back from the nostril white. Lower part of sides and belly white. Specimens from Northern India have four rows of black spots, each spot on the junction of two scales. Black dots along the lower part of sides, and white spots along the whole side. Scales of tail black-spotted. Tail in young specimens vermillion below.

Length, body 2·0; tail 2·5 = 4·50 inches.

Inhabits Ceylon (Blyth), South, Central, and Northern India, and Bengal rarely.

Stoliczka says the transparent disk occurs in young specimens only, becoming opaque with age. Specimens rarely exceed four and a half inches, and Jerdon's remark that it grows to nine inches, applies to a very unusual example, of the Karnatic race.

R. punctata L.

Closely allied to the last, but grows to a much greater size. Scales in 24 longitudinal, and between limbs in from 78—84 transverse rows. Colour brown on back and sides, below whitish. All the scales black-dotted. Sides white-spotted.

Length, body 5·00; tail 7·0 = 12 inches.

Inhabits Southern India, Malabar, Koromandel, the Dekkan, Madras, and Ceylon.

Stoliczka obtained near Mathuran (Bombay) a curious race in which the characters of this species and *Hardwickii* were blended, and not improbably the same as the giant *Hardwickii* noted by Jerdon from the Karnatic. The longest specimen of eight measured body 3·25; tail 3·25 = 7·50 inches. Scales in 26 longitudinal rows as in *Hardwickii*, and in 74—80 transverse rows, which nearly correspond with *punctata*. The colouration was that of *Hardwickii*, and the conclusion that seems inevitable is, that *Hardwickii* is the same as *punctata*, the former being a smaller and widely-spread race, whilst the latter is a giant race attaining its maximum development in the hill ranges of Western India. The enormous difference in the ordinary size of *Euprepes carinatus* in India, where it rarely exceeds 11 inches, and the Andaman race of 20 inches is a parallel case of excessive variation in the same family.

R. anguina, Theobald. Lin. Soc. Jour. x.

The anterior pair of occipitals equal to or but slightly larger than the median occipital shield. Posterior occipitals elongate, each being anteriorly in contact with the last superciliary and the small shield following it. Scales in 22 longitudinal, and between limbs in 65—70 transverse rows. Limbs very short, stoutish. The fore limb does not reach the ear. The hind limb as long as from ear to snout. Colour uniform brown, above,

paler on sides, and white below. Base of tail yellowish. No dark lateral stripe or dots. Length four inches, of which the tail is one-half.

Inhabits Pegu.

R. cyanelia, Stoliczka.

Closely allied to *anguina*, but the median occipital conspicuously smaller. Limbs longer and more slender. Fore limb nearly or fully reaches the ear. The hind limb is less than half from axil to loin. Colour olive brown, with an iridescent blue tinge. Pale brownish olive on the side, a few white spots on the side of the neck and about the shoulder. A narrow white, slightly black margined band from behind the orbit to about the middle of side where it fades, to re-appear on the hip. Tail brown, speckled on the side. Limbs above lineated. Chin and throat yellowish. Size and habitat the same as the last.

EUMECES, *Weigmann.*

Scales of back enlarged, lower eyelid scaly.

E. tæniolatus, Blyth.

Eurylepis tæniolatus, Blyth. J. A. S., B., 1854, p. 739.
Plestiodon scutatus, Theobald. Cat. Rep. As. Soc. Mus.
Mabouia tæniolata, Blyth, And. P. As. Soc., B., Sept. 1871.

Supranasals form a suture behind the rostral. Nostril between two shields. A large pentagonal præocular, one postocular between the last labials with a small one above it; six or seven superciliaries, the third being largest. A vertical oblong loreal, followed by a smaller, and a hexagonal postnasal over the suture of the first and second labials. A vertebral series of enlarged scales, three times as broad as those on either side, and obscurely marked by 10 or 11 fine grooves. Scales in 21 longitudinal series, the two central rows on the belly appreciably enlarged. Two large anals. Two rows of very small shields between the upper labials and the scaly disk of the lower eyelid. Colour

pale olive grey, with three pale-spotted dark bands down the back. Tail speckled with dusky. Below white.

Length, body 3·75; tail 5·25 = 9·00 inches.

Inhabits the outer hills between Jhilum and Kashmir.

E. Blythianus, Anderson.

Mabouia Blythiana, And. Proc. As. Soc., B., Sept. 1871.

Supranasals transversely oblong, forming a suture behind the rostral. Nostril between a small anterior triangular nasal and a posterior sub-quadrangular one. A pentagonal loreal, with a vertically elongated postnasal in front, and two quadrangular shields behind it and under the eye. Eight upper labials, the seventh and eighth largest, the anterior margin of the last on a line, with the posterior angle of the eye. Scales on the body in 30 longitudinal rows, the vertebral pair consisting of enlarged, transversely elongate hexagonal scales, between the nape and the root of the tail. A single row of enlarged subcaudals. Colour olive brown, with three dark brown longitudinal lines from the nape to the base of the tail. A broader dark band from the eye over the tympanum down the side, bordered beneath with a pale yellowish band to the groin, with a dusky band below it. Under parts yellowish.

Length, body 3·5; tail 6·00 = 9·5 inches.

Inhabits Amritsar, Panjab, according to the vendor of the type, a Bokhara merchant.

CHIAMELA, *Gray*.

Body long and slender. Limbs feeble, with four toes only.

C. lineata, Gray.

Anterior frontal large single. Posterior frontals small, separated by the vertical. Anterior occipitals united into an obtusely triangular shield. Nostrils lateral in a single elongated shield. Two loreals. Lower eyelid transparent. Ear small, smooth. Scales smooth in 22 longitudinal rows, and in 82—84 transverse rows between axil and groin. Colour above, iridescent bright

golden brown; sides paler, with a greenish tinge. Below whitish. Each scale with a median dark streak forming continuous lines above, but slightly interrupted on the sides and belly, and indistinct on the throat.

Length, body 2·00; tail 2·3 = 4·3 inches.

Inhabits the Dekkan (Punah).

Hagria, *Gray*.

Body long. Limbs feeble, with five toes before and four behind.

H. Vosmacrii, Gray.

The single præfrontal forms a suture with the vertical. Superciliaries four. Scales in 22 longitudinal rows. Body and tail with alternate brown and yellow lines corresponding to the rows of scales.

Inhabits Bengal.

Little seems to be known of this species, which may not perhaps really occur in Bengal.

Family Acontiadæ.

Head covered with symmetrical shields. Tongue free exsertile, nicked at the tip. Scales of the back, rounded, quincuncial, imbricate; on the belly similar to those on the back and sides. No gular or lateral fold. No femoral or inguinal pores. Tail long rounded fragile. Nostrils in the enlarged rostral plate.

Limbs rudimentary or absent.

Acontias, *Cuvier*.

Legs entirely absent.

A. Layardi Kelaart. Pro. Faun Zey., p. 12.

Colour light olive marked longitudinally with brown spots.

Inhabits Kolombo.

Nessia, *Gray*.

Four rudimentary legs.

N. Burtonii, Gray.

Body and tail elongate, anguine. Tail shorter than body (from breakage and reproduction). Rostral shield large, protruding, depressed, pierced laterally by the nostrils, behind which is a longitudinal groove. Frontals confluent into one large shield; vertical large; concave at side to receive the superciliaries. Superciliaries four. Occipitals three. The central one largest triangular. A very long loreal shield below which is the first labial which is similar in form and length to the loreal. Scales in 25 longitudinal and 84 transverse rows, equal smooth. Eye small. Ear opening not visible. Feet very short and feeble, each ending in three minute toes with short claws.

Length 5 inches, of which body is three inches.

Inhabits Ceylon (Kaduganava, Allagalla, and Ambegammoa) Kelaart.

N. monodactyla, Grey Ann. and Mag., N. H.

Evesia monodactyla Gray.

E. Bellii D. et B.

Tetrapedos Smithii Jan. in Wieg. Arch., 1860, p. 69.

Closely allied to *Burtonii*, Scales in 22—25 longitudinal and 105 transverse rows. Opening of ear minute but distinct. Feet very short and feeble. The hind feet half as long as the snout, and without toes.

Inhabits Ceylon.

N. Thwaitesii Gthr. An. and Mag., N. H., 1872, Vol. IX, p. 86.

Toes four on all feet. Nostril close to the posterior margin of the plate, with no slit behind. Two loreals one behind the other. Body with 26 longitudinal and 72 transverse rows of scales. Limbs more developed than in *N. Burtonii.* Toes distinct and clawed. Ear minute, hidden. Colour brown, paler below.

Body 2·70; tail 1·30 = 4·00, inches.

Inhabits Ceylon.

DIBAMUS, *Dumeril et Bibron.*

Limbs in male 2 posterior, lodged in an oblique cavity.

Females limbless.

D. Nikobaricus, Fitz. Novara. Rept., p. 52.
Rhinophidion Nicobaricum, Fitz.
Typhloscincus Nicobaricus, Stein l. c., p. 94.

"The male is six inches, of which the tail is 0·9 inches. There are 24 longitudinal rows of scales round the body and 48 transverse rows along the tail. The two extremities are on either side somewhat in front of the anus, towards which they converge; they are depressed, each lying in an oblique cavity, the intermediate space of the sacral region being flat, triangular and pointed above the anus. Each extremity is fully as long as the whole head; it is covered on the upper side by three longitudinal rows of scales narrowing towards the end which is occupied by a large flat nail like scale. The body of the female is somewhat stouter; it measures 5·5 inches, of which the tail is only 0·5 inches. The body is again surrounded by 24 longitudinal and the tail by 34 transverse rows of scales. On each side, in front of the anus is an enlarged scale, separated by three small scales from the anal edge and just in the place where the extremity in the male originates, this large scale covers a small opening in which internally a rather strong muscle terminates. The muscle is most probable emissible and retractile at the will of the animal. All other characters are common to both sexes. The upper labial is separated from the rostral by a distinct groove. The shields are dark brown almost blackish with paler edges. Paler below. The shields of the head are yellowish and there are occasionally yellowish spots on the chin and throat or on the lower side of the tail." Stoliczka J. A. S., B., 1873, Part II, p. 169. Commenting on the close similarity of this species and *Typhloscincus Martensii* Stoliczka remarks "Still if it were not Peter's distinct statement that out of these specimens of *T. Martensii,* two are males and one a female, both without any trace of extremities, I should have considered the specific distinction of *D. Nikobarius* from *T. Martensii* somewhat doubtful." l. c.

FAMILY SEPSIDÆ.

This family differs from the SCINCIDÆ and ACONTIADÆ by the nostrils being in the front edge of a small shield in a notch at the hinder side of the rostral.

SPHENOCEPHALUS, *Blyth.*

Limbs rudimentary. Ears hidden. Eyes minute with a semi-transparent lower lid. Anterior limbs fitting into a groove.

S. tridactylus, Blyth.

Body cylindrical elongate, flat beneath and angled at the abdominal edge. Three toes on all feet. Scales smooth and lustrous with an enlarged row under the tail. A large subquadrilateral plate under the eye, and three small plates between it and the nasal. A large lozenge-shaped plate in centre of chin, emarginated anteriorly to admit a small roundish nuchal plate. Tail shorter than body. Colour very pale brown, deeper on the back.

Length, body 4·00; tail 2·00 = 6·00 inches.

Inhabits the sandy tracts in Synd and the Southern and Western Punjab where it is called Rig Mahi 'sand fish.'

S. pentadactylus, Bed. Mad., Mont. J. Med. Sc., 1870, No. 7, p. 30.

Fore legs minute and fitting into a groove. Hind legs well formed. Toes five, on all feet. Nostril in a small shield, let in to the hinder part of the rostral. A small post nasal followed by *two* (?) loreals (though the drawing shows three). The second and third being both in contact with the first. Eye surrounded by small scales. A single narrow præfrontal. Postfrontal hexagonal. Occipitals rounded behind, separated by a minute shield which is let into the base of the vertical. Upper labials 8-9, the fourth and fifth under the eye. Colour uniform dark brown.

Inhabits the sandy banks of the Kuddle Pondy, a tidal stream in Beypur.

Type unique, in the Madras Museum. The head being injured, the character of the lower eyelid could not be determined.

Family Geckotidæ.

Head broad triangular depressed. Back and sides generally covered by granular or tubercular scales. Belly covered with rhombic imbricate scales. Tongue thick and short, its base attached to the gullet. Eyelids generally rudimentary not connivent. Pupil generally erect. Toes generally adapted for pneumatic adhesion. Femoral or præanal pores, in the males only, rarely absent. Eggs globular, calcareous.

Section A. Adhesile plates of feet undivided.

Gecko, *Gray*.

Fingers and toes dilated in their whole length with a series of undivided pneumatically adhesile plates below. Four claws on each foot. Back granular with or without larger tubercles interspersed.

G. guttatus, Daud.

Back covered with small flat granular scales with twelve longitudinal rows of large tubercles. Tail without any enlarged subcaudal shields. Præanal pores from 12 to 32 in a slightly angular series. Colour pale olive gray, slaty over the head, with four or five transverse white bands across the body. Body and limbs red spotted; belly white, red spotted. Longitudinal tubercles of back red, or, when standing on a white band, white.

Grows to about a foot.

Inhabits Eastern Bengal, about Dacca. Calcutta (where probably introduced), Khasi Hills, Arakan, Birmah, and Malayan Peninsula, The Andamans, &c., but not peninsular India, or Hindustan Proper, or Ceylon.

It lays six or eight (or more) very hard shelled white eggs of a globular form and the size of a musket ball, affixing then to trees, rocks, or secluded portions of buildings. When first extruded, they are soft, as they are seen to be indented from mutual pressure being closely agglutinated together. Their voice is very loud. A '*tuk-tay*' several times repeated, and ending in a drawn out guttural rumble. Their voice is very

loud and exerted both by day and night, and though very startling when first heard, should be welcome, as these animals are great destroyers of insects and will devour young rats; and even capture bats.

G. Stentor, Cantor.

G. Verreauxii, Tytler. J. A. S., B., 1864, p. 546.

Back covered with small flat granular scales, with ten longitudinal rows of large tubercles. Tail with a double row of enlarged subcaudals. Præanal pores 13 in a slightly angular series. Colour above pale brown or ashy, with some darker markings. Tail dark and white-banded. Below whitish. Grows to 14 inches.

Inhabits Chittagong, Akyab, Birmah, The Andaman islands, The Malayan Peninsula, Pinang, &c.

This species is readily distinguished from *guttatus* by its enlarged subcaudal shields. Its voice is a '*tuk-tuk-tuk*' several times repeated. The bite of both species is dreaded as poisonous by the natives and ignorant Europeans, though of course only to be avoided from the severe nip which these animals can inflict.

G. monarchus, D. et B.

Back covered with small flat granular scales, with numerous small conicle tubercles arranged in irregular longitudinal series. Tail with band like narrow, irregular subcaudals. Præanal and femoral pores, 32 disposed in a continuous curved series. Colour above buff or reddish brown, with from 8 to 12 pairs of regularly rounded distant dark brown spots along the spine. Head, sides, and limbs, dark-spotted. Beneath yellowish white. Length 7 inches.

Inhabits Ceylon, also the Malayan Peninsula, the Philippine islands, Amboyna, and Borneo.

The voice of this species is a '*tok*' repeated six or eight times with increasing celerity.

Ptychozoon, *Kuhl.*

Fingers and toes dilated in their whole length, with a series of undivided pneumatically adhesile plates below. Four claws to each foot. Back granular, with larger tubercles interspersed. Skin of side expanded into a flap or curtain.

P. homalocephalum, Creveldt.

Back with four or six rows of small tubercles longitudinally traversing the more numerous smaller scales. Tail without enlarged sub-caudals. Præanal pores 25 in a slightly angular series. Colour, head yellowish green olive, a transverse band in whitish outline before the eyes united by a narrow stem to an anterior arrow-head mark. On the vertex a four-rayed rectangular star, with pale outline. A dark band from behind the eye to the shoulder margined above with white. Lips white. The membranes of the cheeks pale flesh colour, with dark blue spots, and the interstitial skin pale lilac. Back same colour as head, but passing on the sides into dark reddish brown, with 4 or 6 transverse M-shaped dotted lines. Tail and limbs with broad, distant indistinct pale transverse bands. On each elbow a whitish ring. Beneath whitish, throat and inside limbs brown-spotted. A Kamorta specimen described by Stoliczka was pale purplish brown, marbled with darker and with indistinct cross bands. Flaps purplish fleshy, with fine bluish marblings. One flap runs from the gape below the tympanum to the neck. A larger one runs the whole length of the body and nearly equals it in breadth. The tail is fringed on either side by a scalloped curtain with 15 to 20 rounded lobes. Grows to 7 inches, of which the tail is nearly half.

Inhabits Arrakan, Ramri, Pegu, Tenasserim, the Nikobar and Andaman islands, the Malayan archipelego, &c.

Cantor says the membranes act as a parachute when the animal leaps, an observation probably suggested by a simulative analogy with Draco, but strong confirmation is needed that the animal ever so uses its flaps. Cantor made the same remark with respect to the loose skin along the sides of Leiolepis, which indubitably never attempts aerial flights.

PHELSUMA, *Gray.*

Fingers and toes dilated towards their tips, with a series of undivided pneumatically adhesile plates below. Claws none. Pupil round. Diurnal.

P. Andamanense, Blyth.

Gecko chamæleon, Tytler. J. A. S, B., 1864, p. 548.

Back finely granular. Sub-caudals enlarged. Femoral pores 28 to 32 in a slightly angular line. Colour rich emerald green, above, below, bright yellow. Red marks on head and back. Grows to six inches, of which the tail is half.

Inhabits the Andaman Islands.

This is a remarkable geckoid form, of diurnal and arboreal habits, and distinguished during life by its brilliant colours. According to Tytler it is very changeable, becoming almost black in dark spots, the full sunlight being required to bring out its richest colors.

Section B, Adhesile plates of feet divided.

CALODACTYLUS, *Beddome.*

"Fingers and toes 5·5, dilated in their whole length with two series of small transverse plates beneath the thumbs, and the first toes ending in a single pair of flat plates, with the claws between them; the other four fingers and toes provided with two pairs of similar plates, one pair terminal and the other pair one-third down the finger or toe, and separated from the terminal pair by several rows of the smaller scales. No cutaneous appendage." Mad. Monthly J. Med. Science, 1870, p. 30.

C. aureus Bed. L. C., p. 31, pl. ii.

"Head and back uniformly granular with very small scales, some few of which are very slightly enlarged: scales of the belly small, nearly square, in about 30 transverse series. Eye large, without eyelid. Pupil elliptic erect, nostrils behind each angle of the rostral with two plates between them: fourteen upper labials, last two very small; thirteen lower ones. Opening of the ear about quarter the size of the eye, not denticulate.

No femoral or præanal pores. No plates on the chin beneath, except the lower labials. Length 6½ to 7 inches, of which the tail is 3¼ to 3½; length of fore-limb 1⅛ inch, hind-limbs 1⅝ inch. Of a brilliant golden colour, freckled with brown over the whole of the upper surface (the yellow colour turns nearly white in spirits). Amongst rocks in dark shady ravines on the Tripathy hills in North Arcot."

It seems improbable (in the absence of any direct statement as to the sex of Beddome's specimen), that the males should possess no femoral pores.

HEMIDACTYLUS, *Cuvier*.

Fingers and toes dilated, ovate, with a double row of transverse penumatically adhesile plates below. Toes and claws five on each foot.

a. *Back granular, with trihedral tubercles, more or less numerously interspersed.*

H. triedrus, Daud.

Back with numerous trihedral tubercles, some of which are as large as the opening of the ear. Back of the tail with cross rows of similar tubercles. Colour brownish olive; some of the tubercles white, surrounded by a brown ring; these rings are sometimes confluent into cross bands. A brown white-edged streak behind the eye. Femoral pores 7 or 8 in each thigh. Length 7 inches.

Inhabits Ceylon, Southern and Central India.

H. sub-triedrus, Jerdon. J. A. S., B., 1853, p. 467.

This form is probably only a local race of the last from which it differs in its rather shorter head, smaller scales on the muzzle and throat, and smaller tubercles on the back. It is the Sookha bullee of the "Yanadees" who distinguished it from triedrus, which they term Deowur bullee. Length 7 inches.

H. maculatus, D. et B.

Back with numerous trihedral tubercles of moderate size, all considerably smaller than the opening of the ear. Tail depressed

with numerous small spines along its lower edge, and cross rows of spinous tubercles larger than those on the back. Colour brownish olive, or dark brown above, with darker spots, bands, or streaks. A pale margined dark eye streak from the eye over the ear. Femoral pores 20 to 28 in an interrupted line. Length 5·5 inches, usually somewhat less.

Inhabits Central, Southern, and Northern India, Bengal Birmah, the Andamans, and Ceylon.

A Birmese specimen obtained by myself had 32 femoral pores, and was 5·5 inches long, but it may have belonged to the following species or race.

H. Pieresi, Kelaart.

H. *Sykesii*, Günther.

H. *macula tus*, D. et B., Theobald. Cat. Rep., A.S., Mus.

Closely allied to *maculatus* in every respect, but grows to a larger size, and to this race must probably be referred the specimen of *maculatus* mentioned by Dum. et Bib. as measuring 9·5 inches. Femoral pores 32 to 36 in a nearly continuous line, the 12 central ones being better marked than the rest.

Inhabits Ceylon.

H. gracilis, Blanford.

Back granular, with rows of sub-trihedral elongate tubercles, of equal size and smaller than the ear. Tail depressed at base, and without any enlarged or spinose tubercles. Colour, above grey, whitish beneath; head and back ornamented with black sub-quadrangular spots which form bands above the back. A pale line from either nostril to the tail, and below it, the sides are marked with longitudinal dark lines. Femoral pores *none*, but 6 præanal pores in a curved line, with the convexity directed forward.

Inhabits South-East Berar.

b. Back granular; with or without larger conical scattered tubercles.

H. Cocteaui, D. et B.*

H. Coctæi auctorum.

H. Bengaliensis, Anderson. J. A. S., B., 1871, p. 14.

Back uniformly granular. A few small tubercles on each side of the sacral region. Tail slightly depressed at the base, verticillate, finely granular above, with an enlarged tubercle on each side of each segment. Thumb well developed, but claw on it very small. Colour greenish grey, with five transverse dark bands, posteriorly edged with white, from neck to loins. Tail similarly banded above. A pale band, dark margined above, through the eye. Femoral pores 6 to 8 on each thigh, widely separated in the pubic region. In old females the tail is often bulged at the base. Length up to 9 inches, but 6 or 7 in the more common size.

Inhabits Orissa, Bengal, North-Western Provinces, The Panjab, Sikkim, Khasi hill, Kachar, Birmah, Bombay (Dum. *et* Bib), Pinang (Cantor), but *not* hitherto recorded from Southern India or Ceylon.

H. Leschenaultii, D. et B.

H. Coctæi, D. et B., *apud* Kelaart. Prod. Fam., Cey.

H. Kelaartii, Theobald. Cat. Rep., As. Soc., Mus.

H. marmoratus, Blanford. J. A. S., B., 1870, p. 363.

Back uniformly granular, with numerous flat scattered tubercles. Thumb well developed. Colour silvery grey, with usually some transverse zig-zag dark marblings. A dark band through the eye. Femoral pores 10 to 16 on each thigh widely separated in the pubic region. Upper labials 10·13. Lower 7·10. Size 5·5 inches.

Inhabits Ceylon, Southern and Central India, Western Bengal, and the North-Western Provinces.

This species can be at once discriminated from *frœnatus* by its larger thumb, and from *Coctæi* by its more numerous femoral pores; and from *giganteus* by its lesser number of labials.

* (Doubtless *Cocteaui* not Coctæi as suggested by Stoliczka.)

H. giganteus, Stoliczka.

General aspect much that of Coctæi. Upper labials 14 to 17, lower labials 11 to 13. First upper labial excluded from the nostril by a semi-circular shield in contact with the rostral. Colour olive grey, the back barred with 4 or 5 transverse undulating bands. Femoral pores 18 to 20 on either thigh, separated in the pubic region by an interspace of 7 scales. Length nearly 12 inches.

Inhabits the Godavery valley near Badráchalam.

H. frænatus, Schl.

H. sublævis, Gray, *apud* Theob. Cat. Rep., As. Soc., Mus.
H. punctatus, Jerdon ? juv ? J. A. S., B., 1853, p. 467.

Back uniformly granular, with some scattered tubercles; usually ranged in ten lines down the back in Bengal specimens. Tail spiny. Colour variable grey, marbled with darker, or grey with irregular stripes and dark marblings, or dark brown with blackish stripes. A pale, dark margined band through the eye to the loins. Thumb very small. Femoral pores 27 to 35 in an uninterrupted line. The median scale sometimes has no pore. Length 5·5 inches.

Inhabits Northern, Central, and Southern India, The Panjab, Ceylon, Bengal, Birmah, the Andaman and Nikobar islands, and the Malayan Peninsula and islands.

This species is easily recognised by its small thumb.

Stoliczka suggests H. *punctatus*, Jerdon, may be a young female of this species. It was captured at Tellicherry, whence fresh specimens can only decide what *punctatus* really is.

H. Mortoni, Theobald. Lin. Soc. Jour., Vol. X.

Back covered with granular scales, with a scattered tubercle here and there, just perceptibly larger than the rest. Thumb well developed. Colour dark brown, mottled pepper and salt, with black spots and small white rosettes of 6 white scales each. Tail barred with black above. Length 3·50 inches.

Inhabits Pegu, north of Rangoon.

One immature male taken under a log.

NYCTERIDIUM, *Günther.*

Fingers and toes dialated, ovate, with a double row of transverse pneumatically adhesile plates below. Toes and claws five. Sides of the trunk with a cutaneous expansion. Tail flattened, serrated on the sides.

N. platyurus, Schneid.

Platyurus Schneiderianus, Gray.

N. Himalayanum, Anderson. J. A. S., B. 1871., p. 15.

Back uniformly granular without tubercles. Tail strongly depressed with finely serrated edges, granular above, scaly beneath, and a central series of enlarged sub-caudals. Colour olive above, marked with darker. A pale lateral band, dark margined beneath through the eye. A few white spots on the body and irregular dark brown, and white alternate spots on the tail. The hind limb with a broad cutaneous fringe or expansion behind. Femoral pores 16 to 20 on either thigh, slightly interrupted in the pubic region. Length 4·50 inches.

Inhabits Ceylon, Bengal, Dorjiling, Assam, the Khasi hills, The Malayan Archipelago, Siam, Pinang, and Java. It no doubt occurs in Birmah, though not hitherto recorded from there.

PERIPIA, *Gray.*

Fingers and toes dilated ovate, with a double row of transverse pneumatically adhesile plates below. Toes five on all feet. Claws four in front, five behind. Thumb rudimentary clawless. Inner hind toes with a very minute setiform claw.

P. Peronii, D. et B.

Back uniformly granular. Tail depressed lanceolate, bulged at the base with a minutely serrated edge, and a row of enlarged sub-caudals. Three pairs of elongate chin shields. A cutaneous fold to the ham. Colour greenish ashy, sometimes with a rosy blush, during life, or pale brown speckled with darker, and numerous white spots. Below white, pinkish towards the sides. Femoral pores 37 to 42 in an angular continuous series. Birmese specimens pale grey rather translucent and with pale whitish freckles scattered over the back. Length 6 inches.

Inhabits Ceylon (Kadugunava, Kelaart,) Burmah, the Andaman Islands, Pinang, &c.

P. Cantoris, Günther.

Very similar in general appearance to *Peronii,* but no chin shields. Chin covered with scales a little larger than the very minute ones on the throat. No enlarged sub-caudal plates. Cutaneous fold of the ham rudimentary. Colour olive brown with some scattered velvet black spots. Beneath white, minutely brown dotted.

Inhabits Pinang, Birmah, and the Andaman and Nikobar Islands.

In some specimens of Peripia the pneumatic lamellæ are only angularly bent and not divided, indicating the close relation of this genus to *Gecko.*

GYMNODACTYLUS.

Fingers and toes with transverse pneumatic plates below on their basal joints only, less disciform than in *Hemidactylus.* The two terminal joints of each foot free; claws 5 on all feet.

Section A, tail generally depressed. House geckoids. Pupils elliptical.

G. frænatus, Günther.

Back granular, with six or eight series of very small tubercles. Tail uniformly granular with enlarged sub-caudals. Colour light brown, with darker markings. A broad band from behind the eye to the side of the neck where it joins two irregular broad cross bars, one behind the occiput, the other between the shoulders. Two or three similar bars across the back, and broad brown rings round the tail. In adults only the dark margins of these bands remain.

Pupil denticulated. Præanal pores two on each side. Length 7 inches.

Inhabits Ceylon.

Young ones coloured or *Eublepharis Hardwickii,* fide Günther, Annals and Mag., N. H., 1872, Vol. ix, p. 86.

G. Dekkanensis, Günther.

Head finely granular. Body covered with flat sub-equal tubercles, disposed in transverse series. Tail covered with rings of square sub-equal scales. Colour reddish olive with narrow white, black-edged cross bands, the first forming a horse-shoe across the nape from eye to eye, three bands on trunk and five on the tail. Pupil elliptical.

Length of type 4·50 inches.

Inhabits the Dekkan.

G. Lawderanus, Stoliczka. J. A. S., B., 1872, p. 105.

Head granular. Body covered with granular scales, with larger ones intermixed of about twice the size of the others. Claws well developed lying between enlarged scales but not retractile. Colour greenish brown, densely marbled and spotted with dark brown, with some indistinct whitish, anteriorly dark margined cross bands. An indistinct dark band from the eye to the ear. Front and hind edges of the eye white. Labials spotted with brown. Length about 4 inches.

Inhabits Almorah.

G. Oldhami, Theob.

G. fasciolatus, mss label. by Stoliczka.

Crown of head behind the eyes finely granular, the scales in front being larger. Back granular with about 30 longitudinal rows of tubercles contained between an area bounded by faint keels margining the belly. These keels are distinctly defined by some small regular somewhat distant opaque white spots. Pupil vertical. Rostral large grooved behind, followed by two small supranasals which are not in contact. Nostrils below the supranasals margined behind by small scales. Mental moderate. Three pairs of chin shields. Eleven upper and ten lower labials regularly decreasing from the front, with 3 rows of enlarged scales beneath the lower labials. Scales of throat minutely granular. A rhomboidal præanal patch of 19 enlarged scales, margined in front by a continuous line of 40 enlarged femoral scales; barely enlarged in the middle and smaller than the scales of the

præanal patch, but fully enlarged at the extremities. These scales are not pierced (probably owing to the sex of the specimen). No enlarged sub-caudals. Tail covered below with small inbricate scales, and with a line of 3 erect white scales on either side of vent. Colour above vinous brown (probably ruddy during life): a white semicircular line joins the superciliary ridges, a second horse-shoe-shaped white line runs from the gape below the ear to the opposite side, enclosing a nuchal collar. Behind the collar two closely approximated white lines run along the spine becoming soon broken up into spots merely. On the sides are more white spots, tending to form three distinct lines, the lowest of which coincides with the ventral keel. Belly whitish. Limbs white spotted above.

Inhabits South Kanara. (fide Beddome).

The tail has been reproduced, but sufficient remains to show that it originally had no enlarged sub-caudals, which *fasciolatus* has.

G. Kachensis, Stol. Proc. As. Soc., B., 1872, p. 79.

Rostral longer than high, grooved above. Nostrils lateral directed upwards, immediately behind the rostral and followed by three small shields. Snout above covered with largish subcarinate shields: top and sides of head with granular scales, with some larger intermixed. Back covered with 12-14 longitudinal rows of enlarged trihedral sharply keeled tubercles, each smaller than the ear, and separated by two or three rows of granular scales. Tail depressed, verticillate, with three rows of large sharply keeled tubercles down each side. 11-12 upper labials, the last 2 or 3 very small. 8-9 lower labials. Mental large, posteriorly pointed. Two pairs of enlarged chin shields followed by a row of enlarged shields along the labials. Scales on the belly in 28-30 longitudinal rows, and separated from the back by six rows of smaller shields. Femoral pores none. Præanal pores 48 in a curved continuous series in the male. Sub-caudals bifid enlarged, irregularly alternating. Toes slender. Two last joints separated from the preceding by a marked enlargement provided with two thickened transverse lamellæ below. Pupil vertical.

Colour ashy gray, dark marked on the head: 8-10 transverse bands on the body, the first springing in a curve from a dark stripe from the eye. Bands sometimes ill-defined or absent. Lips spotted. Below white, tinged yellow posteriorly.

Grows to 4·00 inches (tail 2·30).

Inhabits rocks (rarely houses) in Kach.

Nearly allied to the Cingalese *G. triedrus.*

G. speciosus, Bed. Mad. Monthly Jour., Med. Scien., 1870.

"Of stout form, body finely granular, all the scales being of the same size; scales of the tail larger; of a reddish brown colour, with three broad white transverse bands, one across the neck, one across the middle of the back, and one just in front of the hind legs, each being a quarter of an inch broad, or half the width of the interspaces of ground colour, and edged with black. Crown of the head white, with six reddish brown blotches, three across the occipital region, the centre one of which is elongated, two across the vertical region, and one on the frontal region. Belly uniform whitish, chin beneath blotched or maculated. Tail with four transverse white, black-edged bands as on the body. Femoral or præanal pores none. Sub-caudals not enlarged. Rostral large, grooved behind, with two small plates behind it. Pupil erect ‡ shaped. Upper labials eight, two last very small. Lower labials seven, medial lower labial large, pointed behind. First pair of chin shields rather large, forming a suture behind the medial lower labial, second pair about half the size. Total length 3¼ inches.

In a tope near Erode; very rare."

G. Kollegalensis, Bed. l. c. s.

"In every respect as in *Gymnodactylus speciosus*, but with a very different colouration. Ground colour pale greyish, with four dark brown, 8-shaped marks edged with white, across the body, and a transverse band of large spots between each marking. Head with eight irregular dark brown blotches on a light ground. Tail with about six 8-shaped transverse blotches becoming indis-

tinct towards the tip. Under stones on the lower slopes of the Balarangams, in dry forests near Yellundur."

Neither the measurement or shape of the pupil of this species is given, but Beddome remarks on the precise similarity of the two last species in all save colour, and that but one of each was taken. Can the last be a young male of the first ?

G. Khasiensis, Jerdon. Proc. As. Soc., B., 1871, p. 162.
Gymnodactylus, Khasiensis, Anderson. P. Z. S., February 1871, p. 162.

Head granular. Body finely granular, thickly covered with small trihedral tubercles. Tubercles present on base of tail and hind limbs, but none on fore. Tail cylindrical, longer than body, covered with round, flat, equal tubercles arranged verticillately. No enlarged sub-caudals. The nostril is situated between the rostral, first labial, two supranasals, with a few small scales behind. Colour brown with a series of brown arrow head spots, with the points directed backwards, along either side of the spine, with another obscurer line of spots beneath them. The vertebral spots are confluent on the tail forming eleven brown rings, with yellowish brown interspaces, tip black. The nape and occiput reticulated with brown. Under parts dirty yellow. Præanal pores 13 in an angular continuous series.

Inhabits the Khasi hills.

G. nebulosus, Bed. l. c. s.

"A very small species of rather stout form; muzzle short rounded; body and tail finely granular, many of the scales on the former being enlarged. Scales on the latter uniform. Subcaudals not enlarged. No spines. No femoral or præanal pores. Of a dull brown colour beautifully clouded with irregular dark blotches, which are edged with white. In some specimens, the markings are almost obsolete, and in others they form transverse bands. Rostral large grooved behind, followed by two small shields. Upper labials 8·9, last 2·3 very small. Medial lower

labial not very large, pointed behind. First pair of chin shields large and forming a suture behind it.

Pupil erect ‡ shaped. Total length 2¼ inches.

Golcondah hills near Vizagapatam, under stones at 2,000, 3,500 feet elevation, rare."

G. triedrus, Günther.

Back granular studded all over with small trihedral tubercles. Colour uniform brown. Tail with four indistinct rings of whitish spots. Length of type specimen 4 inches.

Inhabits Ceylon.

H. subtricdrus, Jerdon. J A. S., 1853, p. 467.

Rostral large, grooved above, followed by two minute supranasals, separated by a minute shield or by granular scales. 7 upper labials reaching to below the eye followed by one or two small scales. Mental very large followed by two pairs of chin shields and a small scale on each side. Back covered by 18-20 rows of triangular tubercles, the interspaces being minutely granular. The tubercles as large as the sixth upper labial. Head granular with larger tubercles scattered about. A line of white spots from the gape, meets a second from the eye, behind the tympanum. Colour darkish grey, with some 5-6 dark bands across the back, spotted with opaque white tubercles. 8 femoral pores in each thigh separated by 1 to 3 scales in the pubic region.

Grows to 6·50 inches.

Inhabits Southern India.

This species is probably distinct though closely allied to *H. tricdrus*. In a specimen before me the femoral pores are separated by only one scale, so as to be nearly continuous.

* * *Pupils circular.*

G. Indicus, Gray.

Head and body coarsely granular without tubercles. Tail without enlarged sub-caudals. Colour brownish or greenish mottled; a row of orange dark edged spots during life along the

back and a second similar row on the sides. Lips and base of tail yellowish orange. Pores none.

Length 2·40, of which tail is one-half.

Inhabits the summits of the Nilghiri hills and Kurg. Dr. Günther affects surprise that Dr. Jerdon should describe a diurnal species, as sheltering under stones during the day, but Dr. Günther might have reflected, that this is a common defensive habit of many lizards, and does not imply that the animals never quit their shelter.

G. Kandianus, Kelaart.

Body finely granular, with a few scattered acute conical tubercles along the side, and in rings across the tail; occasionally smooth. Tail with enlarged sub-caudals. Colour brownish grey marked with brown.

Toes annulated with brown. Pores none. Length 3 inches.

Inhabits Kandy and Kaduganava, Ceylon; where abundant.

G. Sisparensis, Theob.

G. maculatus, Bed. Mad. Monthly Jour., Med. Scien., 1870, (præoccupied by Steindachner, Novara. Rep., p. 16, 1867).

" Of stout form, body and tail rather finely granular, some of the scales of the body being rather enlarged, but those of the tail all uniform; no spines; sub-caudals enlarged; of a brown colour with regular transverse bands of oblong dark coloured spots, across the body, and bands across the tail. Rostral large, grooved behind, with two small plates behind it; seven upper labials, the seventh very minute; nine lower labials, the last 3-4 very minute; lower medial labial large triangularly pointed behind. Chin shields 2-3 small pairs not forming sutures. Pupil round. Femoral pores eight on each thigh, in two continuous lines; no pores or enlarged scales on the præanal region; toes very long, slender and laterally compressed, total length four inches, of which the tail is 2½.

At Sholakal, the foot of the Sispara Ghat under logs and stones."

G. planipes, Bed. Mad. Monthly Jour. Med. Scien., 1870.

"Of slender form, snout elongate, body and tail uniformly granular without tubercles. Pupil round. Sub-caudals enlarged. 8 upper labials, the two last being very minute; 6 lower labials, median shield very large, angular behind and separating the chin shields, of which there are 2 small scale like pairs. Femoral pores 16·17 on each thigh, none on the præanal region. The plates on the lower portion of the fingers and toes large and flat, the terminal one much dilated and three times as large as the others. Maximum length 2¾ inches, of a greyish colour with a prominent black blotch on the nape of the neck and generally a row of white black-edged spots down the back.

I have only met with this curious little species in the dry Teak forests near Nellicootah, below the Nilghiris (on the western side) where it is found on trees in the day time. Its peculiar feet almost inclined me to constitute a new genus for it."

G. gracilis, Bed. Mad. Monthly Jour. Med. Scien., 1870, p. 32.

"Of slender form, with rather elongated head, grey coloured, tail banded with black, body with a row of white blotches along the centre of the back, and sometimes with irregular cross bands of black markings, belly pearl coloured, with very minute black dots on the scales. Limbs and toes banded with black markings. Body coarsely granular, with some of the scales considerably enlarged, but scarcely spinous. Regular rows of spines on the thick part of the tail. Sub-caudals enlarged, femoral or præanal pores none. 6-7 upper labials. Six lower ones. Median lower labial large, angled behind; rostral moderate; pupil round. Total length up to 2¾ inches. Under stones in the Palghat hills."

G. Wynaadensis, Bed. l. c. s.

"Head and body finely granular, many of the scales on the latter being enlarged but not spinous. Tail without any spines, rounded, tapering; sub-caudals large, ventral scales small, nearly round, præanal scales very small. Femoral pores five, rarely only four on each thigh. Upper labials 5-6, the first very large, others gradually smaller, last two minute; lower labials 6-8.

Rostral large, grooved behind, with several small scales behind it. Pupil round; length 3-3½ inches. Colour blackish, with brown mottlings. Sometimes a white line from the back of each eye to shoulder; grey beneath.

In the moist forest of Wynaad, found under stones in the day time."

G. ornatus. Bed. l. c. s.

"Head and body covered with fine granular scales, some of those on the latter being enlarged about four times, but not spinous. Tail without any enlarged scales or spines. Some of the sub-caudals enlarged. Belly with about 34 rows of nearly round scales. Præanal pores seven, in front of the præanal region. Opening of the ear small. Pupil round. Seven upper and seven lower labials. Median lower labial large, narrow and square behind, with one plate behind it, and two plates between it and the first lower labials. Length three inches, of which the tail is one and a half. Of a brown colour with an indistinct row of white, black edged spots down the centre of the back, a white band, black edged anteriorly across the neck, just in front of the shoulders. A white line through the lower part of the lower labials which extends to beyond the ear, but not to the cross band on the nape. A similar white band from the cleft of the mouth to the ear. A die-shaped white mark on the centre of the head between the eyes and a large Y-shaped white mark on the posterior part of the head which has a black spot in the lower part of it and is joined on each side by a white line which proceeds from the eye. In a single female specimen the band across the nape and the black spot in front of it are conspicuous, but the other markings are faint or obsolete. South Tinnevelly hills at no elevation, under rock, in dry jungles."

G. Beddomei, Theob.

G. marmoratus, Beddome. Mad. Monthly Jour. Medl. Scien., 1870, p. 31. (Prœoccupied.)

"Of stout form, body and tail coarsely granular, some of the scales enlarged, but not spinous; of a dark colour almost black,

clouded with greyish white markings, or sometimes grey, clouded with black markings; belly uniform greyish; tail uniform greyish brown or sometimes with black and grey alternate bands. Pores eight in a continuous line across the præanal region, and occupying the same breadth as the vent: outer scales on the same row, and 18-20 scales of the two anterior and some scales of the posterior rows enlarged, flat, and white. One enlarged white scale at the base of the tail on each side of the vent, some of the subcaudals considerably enlarged, very irregularly six sided; rostral plate large grooved behind, with ten small plates behind it and two very small ones behind the nasal organs. Upper labials 6-8, the first very large, the last 2-3 very small, lower labials 6-7, the median lower labial very large, produced back into a square base and entirely separating the chin shields. Pupil round; length up to 3½ inches, of which the tail is 1.

Under stones on the South Tinnevelly and Travankor hills 3-5000 feet."

G. Jerdoni, Theobald. Cat. Rep., Mus. As. Soc., B., p. 31.

Back uniformly granular. Down either side a row of distant erect spines, becoming obsolete on the tail. Tail with a single row of subcaudal plates, with a few large scales along their edges. Colour greenish grey mottled with brown. Below greenish white. Femoral pores 8 on each thigh, large, cup-shaped, bordered in front by largish scales, and behind by the granular scales of the back.

Allied to *Mysoriensis* by its spines, and probably from some part of Southern India.

G. Humei Theobald.

G. Mysoriensis, Fergusson, Museum label.

Pupil circular. Rostral large, grooved, followed by three minute shields. Scales on head and body finely granular, larger on the snout and some enlarged ones on the side. A row of distant spiny tubercles, pointing backwards on either side of the belly, between the limbs, and continued along the tail. A few

of the scales on the sides spinose. Tail round, segmented, segments armed above with enlarged spinose scales, beneath covered with enlarged imbricate scales. Colour above blackish grey, head white spotted, a narrow white vertebral line from the nape to root of tail, with irregular white spots along the back, made of clusters of white scales. No enlarged præanals. Below whitish, the scales along the margins of the belly minutely punctated with brown. A small species distinct from *Mysoriensis*, as there are no "large magniform scuta" beneath the tail. Both the museums specimen are probably females as I could see no femoral pores.

Inhabits Kandy, fide Fergusson.

* * * *Shape of Pupil not recorded.*

G. Mysoriensis, Jerdon. J. A. S., B., 1853, p. 469.

Back granular, with two or three distant rows of spines on each side, extending along the tail, scales of the tail imbricate with three rows of nail-shaped subcaudals. Colour greenish brown with a pale vertebral stripe, and a series of dark brown marks on the head, back, and sides. Legs and feet banded. Chin, throat, and anterior portion of eyebrow bright yellow. Præanal pores 2 or 3 on each side. Length 2·5 inches, of which the tail equals half.

Inhabits Bangalor.

G. littoralis, Jerdon. J. A. S., B., 1853, p. 469.

Form slender. Back granular, scales small and equal, on the muzzle *larger*. Colour pale brown with a series of pale marks along the back and tail. A black spot on the nape. Chin and throat pale yellow. Tail with enlarged subcaudals. Length 2·30 inches.

Inhabits the sea-coast of Malabar.

G. Malabaricus, Jerdon. J. A. S., B., 1853, p. 469.

Back granulose: at the root of the tail granules smaller. On the tail, scales large imbricate. A few small spines at the root of the

tail. Colour dark brown marked with black spots, pale edged, and a white spot on the nape. Length 2·40 inches.

Inhabits forests of Malabar.

G. Wicksii Stol. J. A. S., 1873, Part II, p. 165.

Body depressed covered with very small keeled tubercles with some larger white ones dispersed over the back and sides these last being distinctly spinulose. Tail verticillate as in *Hemiductylus frœnatus.* Scales enlarged on the snout but not above the labials. Rostral followed by two small shields separated by a smaller pentagonal shield. Nostril behind the rostral and followed by two slightly enlarged and diverging shields, which nearly separate the nostril from the first labial. 7 upper and lower labials, the first the longest, the last very small in both. Mental large followed by an enlarged shield. No enlarged chin shields, scales on throat and chest finely keeled; on the belly, hexagonal and in 19 longitudinal rows. No enlarged præanals or postanals. Subcaudals scarcely enlarged.

Præanal pores in the male four, and femoral pores four or five in each thigh.

Colour above "powdered brownish grey and white" with a vertebral row of white spots extending to the tail almost continuously; edged before and on the side with black. Side of body, tail and upper surface of limbs thinly checkered with black. A dark streak from eye to the snout, and three more to the ear, occiput, and gape. Labials white spotted.

Inhabits Preparis Island.

Length, 2·50 inches (tail 1·37).

G. Caspicus Eich. Nov. Mem. Soc. Mos, 1841, Tom. vii, p. 114.

G. geckoides Spix. Blyth. J. A. S., XXII, p. 410.

Stoliczka. Proc. A. Soc., B., 1872, p. 80.

General character much as in *Kachensis*, but head shields coarser and carinate, and the tubercles on the back closer and larger; as large as the ear, some being white and separated by one or two rows of granular scales. 11 upper and 8-9 lower labials. Two pairs of enlarged chin shield scales on the belly in 18-20

longitudinal rows with several rows of small scales on the sides. Femoral pores 32-34 in a continuous line. Colour ashy grey with five or six indistinct rows of dark spots across the back. Subcaudals enlarged, entire.

Inhabits the Salt Range of the Punjab.

Stoliczka remarks that "Eichwald's figure gives only one pair of enlarged chin shields."

Section B: *Tail cylindrical.*

G. fasciolatus, Blyth.

Naultinus fasciolatus, Blyth.

J. A. S., B., 1860, p. 114. Anderson, February 1871.

Body finely granular with numerous enlarged trihedral tubercles verticillately arranged. Tail flattened, with granules and tubercles and with enlarged subcaudals. Nostril between four shields; rostral, first labial and two nasals. Colour grey. A dark horse-shoe band from either eye across the occiput and a second on the nape followed by 7 blackish cross bands on the body and 13 on the tail: those on the body posteriorly margined with white. Toes and claws five, with from 4 to 9 transverse plates. Femoral pores 5 to 6 on each thigh.

Length, body 2·15; tail 2·75 = 4·90 inches. Type not adult.

Inhabits the Western Himalayas (Subathu).

G. variegatus, Blyth.

Naultinus variegatus Blyth. J. A. S., B., 1859, p. 279.

Anderson, P. Z. S., February 1871.

Body finely granular, with numerous enlarged trihedral tubercles. Tail cylindrical with granular and tubercles, verticillately arranged, and with enlarged subcaudals. Nostril between the rostral, first labial, nasal and two small tuberculoid shields posteriorly placed.

Colour grey, beautifully spotted and marked with black, set off by subdued white. Tail banded above with black and the terminal third blackish. A broad dark horse-shoe band from eye to eye over the occiput. The back very irregularly banded

with dark bands, paler interiorly and with rather zig-zag borders. Pupil elliptical. Femoral pores 16 on each thigh.

Length, body, 2·75; tail 3·62 = 6·37 inches.

Inhabits Martaban (Moulmein).

CYRTODACTYLUS, *Gray*.

(Tree geckoids.)

Femoral pores in a groove.

C. rubidus, Blyth.

Puellula rubida, Blyth. J. A. S., B., 1860, p. 109.

C. rubidus, Blyth. Stoliczka. J. A. S., B., 1870, p. 165.

Body rather depressed, covered with numerous small and also larger tubercles. Tail round, with largish tubercles near the base gradually diminishing in size towards the end which is curled. Subcaudals not enlarged. Toes free and slender with short, but sharply curved claws. Colour light brown, with a fleshy tinge about the head, with a dark mark on the nape and another across the shoulders. Vertex spotted, with some dark streaks in front and on the sides. Body dark spotted and striped. Tail cylindrical, with numerous broad blackish rings, somewhat confluent below. Pupils elliptical. Præanal pores 3-4 on each side. Grows to 6 inches, of which the tail exceeds the body by about a fifth.

Inhabits the Andaman islands.

The crest and folds of skin, originally described by Blyth, were the result of the strong spirits in which the type specimens had been placed. Col. Tytler describes this species as holding its tail up stiffly when running, an agamoid trait often seen in *Calotes* but not in the typical Geckoids.

C. affinis Stoliczka is described from Pinang, J. A. S., B., 1870, p. 167, but has not yet been recorded from Indian limits.

PENTADACTYLUS, *Gray*.

Fingers and toes with slightly dilated pneumatic undivided plates at their base only. The terminal half compressed and

angularly bent. Claws five on all feet, retractile into a compressed bilobed sheath.

P. Duvaucelii D. et B.

Back granular. The nostril surrounded by four small shields, the first labial and the rostral. Rostral large, notched above to receive a small intranasal shield. Ear opening large ovate.

Præanal pores in five concentric rows, the posterior row of five scales, the anterior of forty-six.

Inhabits Bengal. (?).

B. Eyelids present.

EUBLEPHARIS, *Gray.*

Eyelids well developed; back tubercular; tail fragile; toes without dilated plates beneath; scaled.

Pupil sub-elliptical; Tympanum thin, deeply sunk.

E. Hardwickii Gray.

Gymnodactylus lunatus Blyth. J. A. S. B., 1847, p. 633.

Ten upper and lower labials. Two chin shields larger than the first lower labial. Colour pale reddish white. Head from nape to nose black. Two broad bands across the body, and three or four rings round the tail deep brown with a black margin broader than the ground colour.

Præanal pores 17, in an angular series.

Inhabits Bengal, Madras and Southern India: The Anamullay hills, &c.

E. macularius Blyth.

Cyrtodactylus macularius Blyth. J. A. B., 1854, p. 738.

E. fasciolatus Günt. *A. and M. N. H.*, Vol. xiv, p. 429.

Habit similar to *Hardwickii*. Sides and back covered with oval tubercles widely separated by closely packed granular scales. Nostril in a single shield above the first labial. Eleven upper

and lower labials : a pair of large chin shields behind the mental with four smaller ones in transverse series behind it. Fingers more slender and longer than in *Hardwickii.* Tail verticillate, with eight large tubercles transversely arranged along the hinder margin of each verticil. Colour, during life, translucent, very pink or fleshy grey, in young specimens with a broad black band across the nape, two more across the back, another in the sacral region, and three more, besides its black tip, across the tail. A few black tubercles on the body, otherwise spotless. In adults these bands change to ocelli margined only with black.

Grows to nearly a foot in length.

Inhabits the Punjab (Jelalpore—Theobald), Lahor, &c.

Günther's types of *fascislatus* are from Hyderabad in Synd.

This species was obtained by myself near Jelalpore whilst excavating some sandy soil. It is strictly a terrestrial, and nocturnal form replacing in all probability to the westward the very similar *Hardwickii* of Eastern India.

I have little doubt that Günther's specimens from Hydrabad, Synd, will prove identical with Blyth's *macularius,* which Günther altogether ignores.

TERATOLEPIS, *Günther.*

Head as in *Hemidactylus* covered with small smooth polygonal scales. Body covered with imbricate scales, faintly keeled. Toes five on all feet, clawed, with a divided row of transverse pneumatic plates beneath. Eye close to the gape. Eyelids with a series of largish scales, and above the eyebrow a double row of most minute scales. Ear an oblique slit. Pupils circular ?

P. Z. S., 1869, p. 504.

T. fasciatus, Blyth.

Homonota, fasciata, Blyth. J. A. S., B., 1853, p. 468.

Limbs very slender. Upper and lower labials 8 band like. Scales of limbs small, on inner side of arm, granular.

Colour plumbeous brown (or grey), with 7 or 8, irregular broad whitish cross bands, formed each of three or more contiguous

spots. Beneath bluish ashy. A horse-shoe mark on the forehead (Type). Other specimens are described as having five longitudinal brown bands, regularly interrupted by white spots which form 7 cross bands on the neck and trunk. Length 2·50 inches.

Inhabits Central and Western India (Type from Jaulnah).

In his Monograph of Indian Reptiles, page 99, Dr. Günther refers to Blyth's original description of this species (erroneously referring the description to Jerdon) in a note; appended to his dictatorial assertion that "no Gecko has imbricate scales on the back," though the description he quotes, distinctly describes the scales as imbricate and keeled. He also takes the occasion to describe Mr. Jerdon's (Blyth's) descriptions as "obscure," and generally containing only "the most trivial characters." Sixteen years afterwards, however, Dr. Günther establishes his *Teratolepis*, for the geckoid lizard in question, using the very characters which Blyth had originally pointed out, and which he, Dr. Günther, had so superciliously condemned as obscure and trivial. For Dr. Jerdon's own vindication of himself against Dr. Günther's ungenerous, not to say unjust, criticism, see the Annals and Magazine of Natural History, 1865, Vol. xv, p. 416.

GECKOELLA, *Gray*.

Fingers and toes thick at the base, with the ends slender and rather compressed. Claws five on all feet. Pupil elliptical. No præanal or femoral pores.

G. punctata, Gray. P. Z. S., 1867, p. 98, pl. 9.

Back covered with minute scales, with numerous large convex sub-trihedral tubercles. Chin shields four. Colour above dark chocolate brown, under surface paler. Small white spots on the temple, occiput, back and tail, those on the back, in longitudinal rows, those on the tail more or less confluent into rings. A single white spot on the hinder part of the occiput.

Inhabits Ceylon.

This genus differs from *Teratolepis* in the back being tubercular: from *Eublepharis* in having no præanal pores, and in the

pupil being oblong and erect, and from *Naultinus* by its having no præanal pores. No specimens exist in Calcutta.

FAMILY, AGAMIDÆ.

Head covered with small flattish or convex shields.

Tongue thick, attached to the gullet along its whole base, not notched, or but slightly in front. Scales of the back, sides, and belly imbricate, unpolished. Tail long not fragile. Eyelids well developed. Pupil round. Nostril in a separate plate. Teeth implanted on the edge of the bones of the jaw, with generally a pair of canines in front of either jaw. Limbs well developed.

Femoral or præanal pores none.

A. Tail long. Toes five on all feet.

Tree lizards, habit slender.

DRACO, *Linnæus.*

A semicircular membrane supported by the posterior ribs forms a sort of parachute on each side of the body. A gular sack in both sexes; most developed in males.

Tympanum scaly.

D. maculatus, Gray.

Nostrils directed outwards, lateral. Dorsal scales smaller than the upper labials, some of them only keeled. Male with a very indistinct nuchal crest. Gular sack very large. On each side of the back a series of large trihedral distant scales. Throat with small brown dots. Upper surface of parachute with numerous whitish longitudinal stripes of scales, and with black, rounded spots, of which one in the anterior corner is generally largest. Grows to 6 or 7 inches.

Inhabits Assam, Pegu, Tenasserim, Siam, and Pinang.

Typanum naked.

D. Dussumieri, D. et B.

Nostrils directed upwards. Dorsal scales rather smaller than the upper labials, slightly keeled. A very prominent horn-like

conical tubercle behind and above the posterior part of the orbit Male with a very indistinct nuchal crest. Gular sack very long and narrow. On each side of the back a series of small tubercular prominences, each composed of several small scales. Throat with scattered brown spots. Colour above light. Parachute with blackish violet reticulated lines on the middle and outer half, enclosing round light spots. Jerdon describes the colour during life, of the parachute as red, marked with black and edged with yellow. The gular sack is pale yellow marked with green at the base.

Inhabits Malabar, Kochin, and Travankor.

D. tæniopterus, Günther.

Nostrils directed upwards. Dorsal shields keeled, smaller than the upper labial shields. An indistinct series of larger, distant scales along each side of the trunk. No tubercle above the orbit. Male with a very low nuchal crest. Gular sack strongly compressed, of moderate breadth and length, covered with large smooth scales. Back greenish, iridescent. Parachute with five arched black bands, not extending to the margin, some forked at the base and continued faintly across the back.

Inhabits Tenasserim and Chartaboom, Siam.

Otocryptis, *Wiegmann.*

Back and sides covered with small scales regularly arranged, and with a few larger ones scattered among them. Male with a low nuchal, but no dorsal crest, and a large gular sack. Limbs exceedingly long.

O. bivittata, Wieg.

Head tetrahedral with a sharp muzzle ridge, eyebrows raised, and the bony part of the interorbital space concave and granular. Scales of head keeled, one supranasal scale larger than the rest. Nostril small, round. Scales of throat keeled. No fold on the throat, or in front of shoulder. Scales of body small, keeled, directed downwards, with a few larger intermixed. The hind limb extends far beyond the extremity of the snout.

Colour brownish olive, male with generally a white band along each side of the back. Six or seven brown bars across the back between the bands. Legs and tail barred with brown. A brown band edged with white beween the orbits. Throat and a streak from eye to gape, white. Gular sack immaculate.

Length, body 7·00 ; tail, 3·00 = 10·00 inches.

Inhabits Ceylon.

LYRIOCEPHALUS, *Merrem.*

(*Amended to include Ceratophora, Gray.*)

Scales of body unequal, or minute with distant series of large scales. Nose armed with an obtuse hump or pointed horn.

L. scutatus, L.

Scales of back minute with several distant series of large scales. A crest along the whole vertebral line, superciliary margins pointed behind. Nose in adults humped in both sexes. Gular sack moderately developed. The hind foot extends to the shoulder. Colour above uniform dark green, paler below.

Grows to 15 inches, of which the tail is half.

Inhabits the mountainous parts of Ceylon.

L. Stoddartii Gray.

Ceratophora Stoddartii, Gray.

Throat with longitudinal series of quadrangular scales. A very low crest along the neck, and forepart of the trunk. Scales, on the back, small and smooth, on the sides very large and irregular, with smaller ones intermixed. Snout surmounted by a projecting horn, formed by a modified flexible pointed scale, more developed in males than females, and white, or purplish under excitement. Gular sack none. Colour dark green with dark brown cross bands on the back, tail, and limbs; generally a whitish post-orbital streak.

Inhabits the mountainous parts of Ceylon.

L. Tennentii, Günther.

Ceratophora Tennentii, Günther.

Throat with longitudinal series of quadrangular scales. Nuchal crest very low. Scales on the back, smooth and much smaller

than those on the sides, which are equal, and ranged in regular oblique series. Snout surmounted by a fleshy compressed sub-ovate appendage, covered by small transverse scales. Gular sack none. Colour green, irregularly marked with brownish. In the young, a brown band between the eyes, and from eye to gape. A light band down each side of the spine enclosing a line of vertebral brown spots.

Length, body 3·50; tail 7·00=10·50 inches.

Inhabits the mountainous parts of Ceylon.

L. asper, Günther.

Ceratophora asper, Günther.

Throat with small strongly keeled scales. No nuchal crest. Scales on the back and sides very small with numerous scattered larger keeled scales. Snout surmounted by a projecting, cylindrical slender appendage, covered with small imbricate strongly keeled scales. Gular sack none. Colour brownish, darker marbled. A rhombic spot on the sacral region. In females the nasal appendage is rudimentary. Fore limbs of males with white edged brown spots. Length 3 inches of which the tail is half.

Inhabits the mountainous parts of Ceylon.

COPHOTIS, *Peters.*

Back and sides covered with very large imbricate sub-equal scales, some of them keeled. A nuchal and dorsal crest. A small gular sack in both sexes. In males a very small tubercle behind the rostral shield.

C. Ceylanica, Peters.

Longitudinal series of quadrangular scales on either side of the gular sack. Nuchal crest composed of three triangular scales, separated from the dorsal crest of twelve similar distant scales. Hind leg extends to the shoulder. Colour fawn colored with irregular broad brown cross bands. Tail nearly white with brown rings. A white spot in front of the nuchal crest, and a white band from the gape to shoulder, more distinct in the male. Jaw with a broad brown margin. Throat white with, one or two

oblique brown streaks on the side. Length 6 inches of which the tail exceeds half.

Inhabits Ceylon.

JAPALURA, *Gray.*

Back covered with small imbricate keeled scales, with points directed upwards, with some larger ones intermixed. A small gular pouch in males and transverse gular fold in both sexes. No rostral appendage.

J. variegata, Gray.

Biancia niger, Gray.

Head covered with small irregular keeled scales, muzzle ridge sharp. A small tubercle behind the superciliary ridge. Throat covered with small keeled scales. A series of small shields, from the chin, parallel to the labials. A nuchal crest in both sexes, continued along the back, and disappearing on the tail. Ventral scales strongly keeled, scales of the tail rhombic keeled, larger below. The hind limb extends to the eye. Colour very variable, and changeable during life. Back with iridescent green and reddish brown bands, which ascend obliquely backwards. Head variegated with black, a light black edged interorbital band. Numerous brown streaks radiate from the eye. The end of the gular sack deep blue (not black). Labials sometimes brown, sometimes the upper are yellowish white. Tail with brown or black rings. Günther also describes a large female as almost wholly black variegated with yellow. Females larger than males.

Grows to 12 inches of which the tail is two-thirds.

Inhabits Sikkim up to 9,000, finer and more numerous above 5,000 (see Stoliczka, J. A. S., B., 1872, p. 107).

J. microlepis, Jerdon, Proc. As. Soc., B., March, 1870, allied to *variegata* but differs in its much smaller scales, and the very clearly fewer large ones intermixed, and by the back being coloured red, which is abruptly separated from the green colour of the sides, by "a series of somewhat raised scales." Length about six inches.

Inhabits Sikkim.

J. planidorsata, Jerdon. Proc. As. Soc., B., March, 1870.

Back very flat, without nuchal or dorsal crest, but "a double series of very slightly enlarged keeled scales, separated along the back by one row of smaller scales but on the neck by four or five" rows, and also several rows of angularly bent larger scales, the angle directed backwards. "It has a strong similarity in the arrangement of the scales to *J. Swinhonis* from China."

Length, body 2·00; tail 3·25 = 5·25 inches.

Inhabits the Khasi hills.

But three specimens of these two species were obtained by Jerdon, and Dr. Anderson (Proc. Zool. Soc., Lon., February 1871) has ranged both as synonyms of *variegata*, an identification not admitted by Stoliczka with regard to the former, and wholly repudiated by him as regards the latter form.

SITANA, *Cuvier.*

Limbs long with five toes in front and only four behind.

Scales regularly arranged, keeled. Male with a large gular appendage. Eyelid scaly.

S. Pondiceriana, Cuv.

S. minor, Günther, I. R., p. 135.

S. Dekkanensis, Jerd., P. A. S. B., March, 1870, p. 76.

Size variable with locality from 5·50 inches in Northern India (Stol. J. A. S., 1872, p. 109), to 7·50, in Ceylon (W. Blanford, J. A. S., 1870, p. 367), or perhaps a little more, the tail being more than twice the length of the body. Limbs of variable length, the fore limb sometime not reaching the vent, in other cases stretching beyond it. Colour, fawn-colored with rhomboidal dark spots on the back and a pale yellowish streak from below the eye through the ear to the loins, and a pale yellowish vertebral line also, a blue line from the mental down the pouch, which during courtship, is brightly parti-colored blue black and red. The labials often blackish.

Inhabits Western Bengal, Northern, Central, and Southern India, Ceylon, the Panjab.

Jerdon l. c. points out that as the smaller race was the type of *Pondiceriana* the term *minor* is inapplicable for the larger race, and suggests *Dekkanensis*, but the balance of opinion of both Stoliczka and Blanford is in favor of regarding these forms as mere local races and not as distinct species.

DILOPHYRUS, *Gray*.

Back and sides covered with equal, minute, granular scales. A very high nuchal and dorsal crest, the lobes of which are united by a membrane. Gular sack small. Tail compressed, very long.

D. grandis, Gray.

D. grandis Gray, Cantor. J. A. S., B., 1847, p. 640.

Body and tail compressed, limbs long. Head, neck and body entirely covered with very small scales. Nostril small in the upper part of a sub-quadrangular shield. Eyelids entirely covered with granular scales. Gular sack small, ventral scales small, smooth. The nuchal and dorsal crests high but discontinuous at the shoulder. Sub-caudals two rowed. Colour, head, neck, throat, and gular pouch gambogo, the scales edged with brown. The eyelids dark brown, the tarsi buff. A dark blue streak from the eye to nostril. Labials and tympanum pale blue. Seven oblique dark blue streaks down the throat. Two brown bands enclose the tympanum, meeting above. Back purple brown, changing to deep lilac on the sides. Beneath white. Side of the body with oblique series of lozenge-shaped spots, either red or bright gamboge. Crests mulberry brown. The upper half of the foremost 13 scales light green, and the foremost 10 scales of the vertebral crest with their upper half pale yellow. Tail broadly banded white and brown.

Length, body 6·50 ; tail 16·00 = 22·50 inches.

Inhabits Pinang : Pegu.

BRONCHOCELA, *Kaup*.

Body and sides covered with equal scales, regularly arranged. The tips of these on the sides directed backwards and down-

wards. Dorsal crest of non-united species. Gular sack slightly developed. Tail not compressed.

Tympanum naked. Scales equal, directed backwards and downwards. Head without appendages or prominent spines. Dorsal crest of non-united spine. Gular sack small. Tail very long. Femoral pores none.

B. cristatella, Kuhl.

Agama cristatella, Kuhl. Beitr. Zool., p. 110.

A. gutturosa, Merr.

Scales small in 40 transverse rows on the sides between the vertebral line and belly. Ventral scales larger, in 14 longitudinal rows. A short row of larger scales forms a continuation of the superciliary ridge.

Nuchal crest low, formed of triangular spines.

Colour uniform grass green. Grows to 20 inches (tail 16).

Inhabits the Malayan countries, East Indian Islands, and the Nikobars.

B. Moluccana Less. Voy, Coqu. Rep., pl. I, f. 2.

Pseudocalotes archiducissæ, Fitz. Stein Nov. Rep., p. 27.

Scales in 29-31 rows. Colour green. The orbit, tympanum sides, extreme margin of labials and a spot behind the tympanum black, end of tail brownish.

Nikobars.

Peters considers this a distinct species, but Steindachner refers it to *cristatella* which view Stoliczka also adopts. J. A. S., 1870, p. 179.

B. jubata, D. et B. Erp. Gen. IV, p. 397.

B. gutturosa, Fitz. Ausb., p. 398.

B. jubata, D. et B. Stoliczka, J. A. S. B., 1870, p. 179.

Scales in about 20 transverse rows between the vertebral line and belly. Ventral scales in 12-16 longitudinal rows, a short row of larger scales from the superciliary margin. Colour green spotted about the neck and barred with yellow. Head sometimes yellow. Gular sack red (seasonally?). Java specimens

have 8 upper labials and a smaller rostral. Nikobar specimens 10 upper labials and a larger rostral. A Nikobar specimen had most of the tail posteriorly reddish brown.

Grows to 21 inches (tail 16.)

Inhabits Java, and the Nikobars, but not India Proper. Stoliczka suggests if the "*Pondicherry*" specimen of Dum et Bibron may not have really come from the French Missionaries on the Nikobars *viâ* Pondicherry. Probably so—

B. indica, Theob.

Scales round the body in more than 50 rows; those on the back largest, irregular; on the belly not larger than the rest. Two or three enlarged scales between the eye and tympanum. A sub-obsolete indistinct spine at the posterior extremity of the superciliary ridge. A minute seemingly recurved spine behind the last, equidistant from eye and tympanum, and three long erect isolated spines on the neck. Two or three rows over each orbit of large superciliary scales separated on the crown by one or two small scales only. An oblique fold in front of the shoulder lined with minute black scales. Limbs long and slender. Hind toe laid forward reaches to the nostril. Colour muddy olive, whitish below. A white streak from below the eye to the tympanum.

Length 9·50, (tail 7·00).

Inhabits Southern India.

Calotes, *Cuvier*.

Nasal separated from the labials by two rows of small scales.

Body and sides covered with equal scales, regularly arranged. The tips of those on the sides directed backwards and upwards. Dorsal crest of non-united species. Gular sack slightly developed.

A.—A fold before the shoulder.

C. nemoricola, Jerdon.

A detached spine in front of two or three small ones on either side of the nape. Dorsal crest extending over one-third of the

back only. A fold before the shoulder. Scales of the sides very large, smooth, of the belly much smaller, keeled.

Colour green. Length, body 10·00; tail 8·00 = 18·00 inches.

Inhabits Kunur Ghat, Nilghiri Hills. Ceylon (Günther).

C. mystaceus D. et B.

Two groups of small spines above each tympanum. A series of slightly larger scales from the eye to above the tympanum. Dorsal crest well developed. A fold in front of the shoulder. Scales on the sides nearly twice as large as those on the belly. Colour, during life, dark brown; often ruddy vinous, with a conspicuous white band from the nostrils to behind the shoulder, and sometimes to the base of the tail. Sometimes only a few dead white spots on the body, or white or yellow blotches on the shoulders. Seasonally the males (and some females) assume a gorgeous livery the gular sack and the entire fore-part of the body becoming a bright deep blue, red mottled on the throat (fading in spirits to green but green is not the hue of the living animal.) The largest female I have seen measured, body 4·50; tail 8·50 = 13 inches. Stoliczka records one 16 inches. A male measured, body 4·25; tail 6·00 = 10·25. Gunther says it grows to 24 inches, which is I believe an error.

Inhabits Arrakan, Pegu, Tenasserim, Siam, Ceylon. The Nikobars (Blyth) the Garo Hills, &c.

C. Rouxii D. et B.

Two small groups of spines on each side of the neck.

A fold in front of the shoulder. Tail compressed into a sharpish edge at its base, covered superiorly with very large pentagonal scales. Tail below with four longitudinal series of strongly keeled scales, each with a posterior point. Colour brown, uniform, or spotted with black.

Inhabits India.

C. ophiomachus Merr.

A single series of spines descends obliquely backwards above the tympanum. Scales between the eye and tympanum small,

equal. Dorsal crest much elevated anteriorly, and extending along the trunk. A fold behind the lower jaw. Colour dark green, with four to six vertical white bands on the body, brown edged in young specimens. Head lighter coloured, or red, seasonally a red stripe through the eye, and nuchal crest and throat red, (Blyth). Tail white banded anteriorly, brown banded behind, with some white streaks or spots on the limbs. Body 5·2; tail 20·80 = 26 inches according to Günther.

Inhabits South India, Ceylon and the Nikobar Islands.

C. Elliotti Günthur. J. R. p., 142.

C. Rouxi D. et B. apud Jerdon. J. A. S., B., 1853, p. 471, and Pro. A. S. B., 1870, p. 877.

Scales of the sides small, nearly as large as those of the abdomen. A spine behind each superciliary ridge. A fold before the shoulder. Colour pale brown, with indistinct dark stripes on the upper parts. A few yellow scales on the sides. Head and shoulders red (seasonally) Throat reddish, tinged with bluish.

Length, body 2·50; tail 5·50 = 8·00 inches.

Inhabits Malabar, Pigeon Island (Jerdon), Matheran (Stoliczka).

C. nigrilabris, Peters.

C. Rouxi, Blyth. J. A. S., 1853, p. 647 (not D. et B.)

A single series of from three to six spines above and behind the posterior part of the tympanum. No gular pouch, scales between the tympanum and eye, enlarged. Dorsal crest moderately developed, and continued on the tail as a series of prominent keels. Scales on the sides slightly keeled and smaller than on the belly, which are strongly keeled and smaller than those on the throat. A fold before the shoulder. Colour green, a black band along the upper lips involving the tympanum. A pale streak from the tympanum to the shoulder. In some young samples the lips and temple are green, variegated with black, and some females have a black edged white band behind the eye not reaching the tympanum. Length (Blyth's type of *Rouxi*, J. A. S., 1853 p. 647). Body 3·30; tail 11·70 = 15·00 inches.

Inhabits Ceylon.

C. Emma Gray.

Three small separate group of spines on each side of the head, one behind the superciliary margin, and two over the tympanum. Dorsal crest well developed on the neck and fore-part of body. A black fold in front of the shoulder. Colour brownish olive with brown bands across the back, interrupted by a pale whitish lateral streak. Eyelids with short radiating brown streaks and a brown streak from the eye to the tympanum. Legs and tail indistinctly dark barred.

Length, body 3·00; tail 8·00 = 11·00 inches.

Inhabits Pegu and Tenasserim. Ponsi in Yunan, Assam, and probably the Khasi hills.

C. Maria Gray. P. S. S., 1870, p. 778, Pl. xlv, 6 B.

C. tricarinatus, Blyth. J. A. S., 1853, p. 650.

C. platyceps, Blyth. J. A. S., 1852, p. 354, vide Günther p. 38; 1870, p. 778.

Two series of larger scales, more or less spiny over the tympanum, the upper being continuous with the superciliary ridge. Scales of throat small. Dorsal crest developed on the neck and anterior part of trunk. Gular sack oval. A fold before the shoulder. Colour uniform green. Head of males bright green during the nuptial season. Elbows and keels with a yellowish white (red in life) spot.

Length, body 4·00; tail 12·00 = 16·00 inches.

Inhabits the Khasi hills and the Himalayas, Dorjiling (Jordon). The Garo hills (Anderson).

C. Jerdoni Günther. P. Z. S., 1870, p. 778, Pl. XLV, f. A.

Enlarged spines close over the tympanum. Scales of the throat large. Nuchal crest lower than in *Maria*, formed of triangular compressed laminæ. Colour green with a red stripe down each side of the back, continued as a line of red spots along the tail, and red elbow patches. This species never attains the size of *Maria* but runs uniformly smaller.

Inhabits the Khasi hills.

C. gularis, Blyth.

Salea gularis, Blyth. J. A. S., 1853, p. 473.

Fourteen lengthened spines from occiput to behind the shoulders, the seventh and eighth longest. Gular pouch well developed. Two inconspicuous ridges of slightly lengthened spines above the tympanum.

Body, 4·75; tail 11·75 = 16·50 inches.

Inhabits Mirzapur.

C. liocephalus Gün. An. & Mag., N. H., 1872, Vol. IX, p. 86.

No spines on the side of the head. Dorsal crest of moderate slender spines on the neck, sinking to a mere serrated line on the back, but a few longer spines in the sacral region. A distinct fold in front of the shoulder, covered with granular scales. Gular sack small. Colour green with irregular dark cross bands on the back. Crown of head mottled with dark green. A narrow green band from the eye to above the tympanum. Tail olive with broad brown ring. Limbs with green rings.

Body 4·00; tail 11 = 15·00 inches.

Inhabits Ceylon.

B.—No fold before the shoulder.

C. versicolor, Daud.

Two small groups of spines perfectly separated, above the tympanum. Dorsal crest moderately elevated on the neck and anterior part of the trunk, extending only to the tail in large individuals. No fold before the shoulder. Scales largish, keeled. Colour pale brown with darker lozenges or bands along the back and a pale lateral band. Two black specks on the occiput, some dark specks about the eyes. Seasonally the males assume a brilliant garb, body bright red, extending occasionally to the loins, tail and limbs black, head and neck yellowish, picked out with red, or wholly red. Grows to a larger size in Ceylon and Southern India, than in Bengal. A Ceylon specimen measured, body 5·00; tail 11·00 = 16·00 inches. A large male from Pegu, body, 3·75; tail 11·00 = 14·75 inches. Jerdon mentioned one from Southern India probably, of 18 inches, but such a size is rare.

Inhabits Northern, Central and Southern India, Ceylon; Bengal, Assam, Arakan, Bhamo, Birmah, and Tenasserim.

C. gigas Blyth.

C. *ophiomachus* Mer apud Blyth. J. A. S., 1842, p. 870.
Resembles *versicolor*, but is larger, has no gular sack but a double nuchal crest of spine—like scales half an inch long. Dorsal crest also more developed than in *versicolor*. Colour apparently uniform, but specimen bleeched and locality unrecorded.

C. viridis, Gray. An. & Mag., N. H., 1846, Vol. XVIII, p. 429.
"Nape with two isolated spines above the ears. Neck without any pit in front of the shoulder, but with dark spots at the hinder part of the lower jaw. Eyebrows not horned. Green. Scales large; at base of tail larger; of limbs and underside of the body smaller; of crown, smallest. Nape and shoulders with a compressed crest. Hinder part of back and tail with an obscure keel.

Hab. Madras.

Like *C. versicolor*, but uniformly coloured, the back less crested and the scales smaller."

Günther unites this species with *versicolor*, but erroneously I believe. Certainly *versicolor* is never seen green, in any part of India with which I am familiar.

Brachysaura, *Blyth.*

Like *Calotes*, but with enormous head, stout body and tail not longer than body. Toes short and strong. Direction of scales less oblique than in *Calotes*, but not so straight as is *Salea*.

B. ornata Blyth. J. A. S., 1856, p. 448.
A slight nuchal crest and dorsal ridge of high-keeled scales. Two tufts of sincipital spines one contiguous to the tympanum and each comprising one principal spine. A fold before the shoulder. Colour olive with a row of large round dark spots, bordered with white, along the back and anterior half of tail; continued

indistinctly to the end. The white colour broader and forming a pale spot on each side of neck. A white spot anteriorly to the last on the crest. Lower parts yellowish white, the throat speckled with pale dusky. A conspicuous oblique white band from beneath the eye to gape.

Inhabits Sagur, Central India.

SALEA, *Gray*.

Nasal pantagonal, resting on the first labial.

Scales of back and sides strongly keeled, with larger ones interspersed. Scales form longitudinal series, with the tips directed backwards. Head without spines. Back crested. Gular sack or fold none. Nostrils lateral in the hinder part of a small shield.

S. Horsfieldii Gray = female.

S. Jerdoni Gray = male; teste Günther.

Calotes viridis Gray, apud Blyth.

Dorsal crest high in the adult male, separated from the nuchal portion by a short interspace. Crest rudimentary in females. Colour bright grass green marked with brown. Back with irregular black and white cross bands. Many white scales being dark margined and black ones with a red longitudinal streak. Head red and white spotted. Crest partly black, partly red. A black band, white margined below, from the eye to behind the shoulder, interrupted behind the tympanum. Large isolated scales, white. Legs banded like the back; tail brown barred.

Length, body 4·00; tail 11·00 = 15·00 inches.

Inhabits the Nilghiri hills and Newera Ellia, Ceylon.

Günther, with the 'types' before him, unites both of Gray's species, but Anderson seems to regard them as distinct, J. A. S., 1871, p. 32.

Salea gulavis of Blyth seems a *Calotes*.

ACANTHOSAURA, *Gray*.

Back and sides covered with very small scales, with larger keeled ones intermingled. A free spine behind the superciliary edge. A dorsal crest of non-united spines. Gular sack none.

A armata, Gray.

Body covered with small rough granular scales, larger scales each terminating in a small spine. A vertebral crest, slightly interrupted on the neck. Spines of crest long anteriorly, triangular behind. A fold before each shoulder not extending across the throat. Ventral scales keeled. The scales in the præanal region larger than the ventrals. Tail slightly compressed. Scales below strongly keeled, longer than broad, each terminating in a small spine. Colour greenish brown with roundish light spots. Five or six black lines radiate from the orbit over the lip.

Length, body 5·50; tail 7·00 = 12·50 inches.

Inhabits Tenasserim, Singapore, Pinang and Kochin China. This genus is hardly represented in British India, save in Tenasserim. I once, however, procured a lizard in Rangoon, with an orange vertebral line, which I doubtfully referred to *A capra* Günther.

Tiaris, *Gray.*

Back and sides covered with small imbricate scales with scattered larger ones. No spine behind the superciliary margin. Dorsal crest of non-united spines. A gular sack in males and fold before the shoulder in both sexes.

T. subcristata, Blyth.

Coryphophylax Maximiliani Fitz.

Scales of the body very small, intermixed with some larger ones. Some enlarged tubercles at the base of the tail. Subcaudals in two rows very sharply keeled. Nuchal crest small save in old males, in whom it is higher than the dorsal. Dorsal crest continued to the end of the tail which is considerably compressed. Limbs and tail very long. Colour in adults uniform greenish with some dark stripes in front of the shoulder. Males reticulated and obliquely striped with dark brown on the sides, the light interspaces variegated with yellow and red. Sometimes the whole vertebral region purplish red. The gular sack is reticulated with reddish yellow, and black. Numerous black streaks radiate

from the eye. Labials dark spotted or wholly brown. Tail encircled with broad dark bands.

Length, body 4·00; tail 11·00 = 15·00 inches.

Inhabits the Andaman and Nikobar Islands, swarming at Kamorta and Nankowri. (Stoliczka, J. A. S., B., 1870, p. 182.)

CHARASIA, *Gray*.

Body and sides covered with small keeled scales with some larger ones interspersed.

Tail round. A fold before the shoulder and gular sack in males, (Oriocalotes, Günther).

C. minor, Gray.

Oriocalotes minor Gray. Günther, I. R., p. 147.

Scales of moderate size with larger ones intermixed, the tips directed upwards; a spine behind the superciliary ridge; a dorsal crest, more distinct in males. Subcaudals keeled, as broad as long. Aspect that of a *Calotes*. A low crest of triangular spines commences on the neck, and is continued to the end of trunk. Scales on the sides as large as those of the belly, with larger intermixed. Colour greyish olive, marked with brown; brown bands on the limbs, tail, and between the orbits which are marked also with radiated streaks.

Length, body 2·50; tail 4·50 = 7·00 inches.

Inhabits Sikkim.

C. major, Jerdon. Proc. As. Soc. B., March 1870, p. 77.

Closely allied to the last, but differs in the scales of the belly being conspicuously larger than those of the sides, and in colouration. Colour purplish grey above with black cross band on the head, and, arrow-shaped ones on the trunk, to the root of the tail. A blackish band from the eye along the side of the neck. Sides green, mixed with black (the black scales small and smooth, the green large and keeled). Limbs and tail barred and ringed with dusky. Throat white, black dotted. Gular sack light purple. Belly tawny white, brown dotted.

Length, body 3·10; tail 6·25 = 9·35 inches.

Inhabits the Sutlej valley near Kotgurh.

Tail round not verticillate. No gular sack. A transverse gular row of small scales. Oreotiaris Günther.

C. tricarinata, Blyth.

Calotes tricarinatus, Blyth. J. A. S., B., 1853, p. 650.

Tiaris Elliotti, Günther. P. Z. S., 1860, p. 151.

Oriotioris Elliotti Günther. I. R., p. 150.

Scales slightly keeled. A central occipital one, slightly larger. Interorbital space very narrow. Muzzle ridge and edge of orbit form a continuous sharp edge. Nostril small, in a single shield over the first labial. Mental shield subtriangular, longer than broad. Five lower labials. Throat covered with imbricate keeled scales. A small conical tubercle behind the orbital edge, and another on the throat below the tympanum. A series of tubercles above the tympanum, stretching towards the nuchal ridge. A series of enlarged keeled scales along the back, to the root of the tail. Scales of the belly imbricate, rhombic subequal and regularly ranged. Præanals not enlarged. Scales of tail imbricate. Colour olive brown, variegated darker in males. Beneath dull yellowish.

Length, body 2·50; tail 4·50 =7·00 inches.

Inhabits Sikkim.

Tail slightly compressed, sub-verticillate. No gular sack. A gular cross fold. A tubercular spine on the hinder superciliary edge. Charasia Gray.

C. dorsalis, Gray.

Head depressed, triangular. Body covered with subimbricate keeled scales, with larger ones mixed, not always very distinct; in 130-140 rows round the body. Throat covered with small smooth scales and a series of five larger ones, on each side of the chin, separated from the lower labials. Mental elongate, triangular pointed behind. Two groops of small spines above the tympanum. Nuchal and dorsal crests, low. No enlarged præanals.

Colour dusky grey with dark markings. A black band behind the eye, continued down the side and a second behind the gape. Limbs black dotted. Males seasonally above, a fine vermillion red. sometimes passing to yellow. Belly, limbs and tail black.

Length, body 5·50; tail 10.50 = 16 inches.

Inhabits Maisor, Bangalor and the Nilgiri hills.

C. Blanfordiana Stoliczka. J. A. S., B., 1872, p. 110.

C. dorsalis Gray, apud Blanford. Jas. B., 1870, p. 368.

Head subtrigonal shorter and blunter in young specimens, and parotids much smaller in adult males. Similar in general aspect to *dorsalis* but with larger scales which only form 80·100 rows round the body. The limbs are larger, and the scales as well as larger, more distinctly imbricate. The scales on the tail are larger than those on the body and the median series above slightly larger than the rest. Colour variable, as in *dorsalis* olive brown, with some lozenge-shaped spots on the back.

A brown band from the eye to the shoulder, margined below with white. Tail banded above, dingy white below. Males seasonally Cinnabar red before, black behind.

Length, body 3·80; tail 8·20 = 12·00 inches.

Inhabits Raipur, Chatisgurh, Udipur, Ranchi, Hazaribagh, Parisnath in Western Bengal, and is not improbably the species recorded as, *dorsalis* from the Panjab and Birbhum. (For full details consult Stoliczka's and Blanford's Papers, l. c.)

PHRYNOCEPHALUS, *Kaup*.

Head short depressed, obtusely rounded in front. Nostrils in front of the snout directed upwards and forwards. Body and tail depressed, covered with very small scales. Throat with a transverse fold—viviparous.

P. caudivolvulus Pall.

P. Stolizkai Steind. Nov. Rep., p. 23, tab. 1*b*, 6, 7.

Scales of back equal, very small. Thirty-one quadrangular upper labials. The hind leg does not reach to the eye. Colour greyish olive, marked with blackish. Adult males with the

centre of belly and tip of tail black. Length 4 inches, of which the tail is more than half.

Inhabits Tibet at 15,000. Lake Chomoriri, &c.

I am not aware if this interesting species is found on the Southern slopes of the Himalayas. These lizards are monogamous, two occupying a shallow burrow in the earth, the mouth of which is usually concealed by a stone or tuft of grass.

B. Femoral or præanal pores or callous scales in their place.

Tympanum naked.

STELLIO, *Daudin.*

Body depressed. Scales of back and sides unequal in size and shape. Tail round, scales irregularly verticillate. Throat with a cross fold. No gular sack. No femoral or præanal pores, but thickened spongy scales in the præanal region.

S. tuberculatus, Gray.
S. Indicus, Blyth.
Barycephalus Sykesii, Günther. I. R., p. 157.

Enlarged scales along the back in 13 to 17 longitudinal series. A minute nuchal crest, but the scales not enlarged on the middle of the neck. An enlarged row of scales below the eye. The scales of the belly in 48-54 transverse rows. A few enlarged scales on the sides. A spiny crest from the eye to the tympanum. 12 upper and 11 lower labials. Colour, body and limbs dark olive, brown, almost blackish, with darker spots in the young, with yellow spots intermixed. The head of the adult is cineritous olive spotted black and yellowish on the side, on the breast, and sides orange spots. Below dull white, dusky spotted on the throat, and spotted and tinged with reddish blue. Seasonally males above bluish black, strongly tinged with purple.
Length, body 5·00; tail 8·50 = 13·50 inches.

Inhabits the Western Himalayas up to 12-14000 feet, and recorded by Blyth from Mirzapur.

S. menurusla, Blyth.

Laudakia and Plocederma melanura, Blyth. J. A. S., B., 1854, p. 737.

Laudakia tuberculate, Gray. Cat. Rep., A. Soc. Mus.

On the middle of the back 8 rows of enlarged keeled scales, the keels forming longitudinal lines; no enlarged scales on the back of the neck, save those forming the nuchal crest. The scales of the belly smooth in 53 transverse rows. The scales of the sides are granular, with a minute apical spine, in transverse rows and without enlarged scales among them. 17 upper and 15 lower labials. Colour olive grey, speckled over with dark scales, and some scales paler than the rest. Throat and below the shoulders beautifully marked with greyish black.

Length, body 3·7 ; tail 7·7 = 11·4.

Inhabits the Western Himalayas, Simla, Kashmir.

S. Dayanus, Stoliczka.

Enlarged dorsal scales moderate, sharply keeled in about 13 longitudinal rows in the centre of the back, smaller, but distinctly continuous on the neck up to the occiput. Nuchal crest small. Numerous enlarged, almost spiny scales on the sides among the smaller ones. Scales on the belly indistinctly keeled, with a patch of enlarged hardened scales in the centre, where the scales form 40 longitudinal rows. Præanals thickened, spongy in the middle, and transude a fluid. Scales of the tail irregular at the base, further on, arranged in verticils. Colour, in adults blackish, with indistinct darker spots on the back. Head paler, body densely yellow spotted, throughout reticulated with bluish. Seasonally males tinged with red and blue on the fore parts. Throat blue. Beneath yellowish white. Terminal two thirds of tail blackish.

Length, body 6·00 ; tail 12·00 = 18·00 inches.

Inhabits the Western Himalayas, Hurdwar, Masuri, Kalka, Simla.

S. Himalayanus, Stein. Novara. Rept., pt. 1, 1867, p. 22.
Enlarged scales of the back smooth.
Inhabits Ladak and the Upper Indus valley.

TRAPELUS, *Cuvier.*

Body depressed, covered with irregular scales unequal in size. Tail rounded, covered with imbricate keeled scales. Parafoids unarmed. Head and neck without spines. Throat with a cross fold. Nuchal crest none, or rudimentary. Neck contracted. Eyelids with a fringe of small scales. A series of pores in the male. Femoral pores none.

T. megalonyx Günth is recorded from Afghanistan, and may range into India—or other species of the genus.

AGAMA, *Cuvier.*

Body depressed, covered with rhombic keeled scales with some scattered spinous ones. Throat with a longitudinal and one or two cross folds behind. Groups of spines on paratoids and sides of neck. Tail covered with imbricate rhombic scales, a series of pores in the male. Femoral pores none.

A. agilis Oliv.
Trapelus flavimaculatus Rupp. Blyth, J. A. S., B., 1854.

UROMASTICIDÆ.

Herbivorous agamoids mostly gregarious and social.

LIOLEPIS, *Cuvier.*

Tympanum naked. Scales minute and granular. Tail depressed, with very small square keeled scales arranged in transverse series. Throat with two transverse folds. Ventral scales smooth. Femoral pores. Skin of the trunk lax, forming a pseudo-parachute.

L. guttatus Cuv.

Uromastix Belliana, Gray.

Leiolepis Reevesii, Gray.

L. Bellii, Gray.

Eyelids scaly. Thirteen to nineteen femoral pores on each thigh, separated in the pubic region. Colour pale reddish brown with numerous dark circled orange spots on the back. Sides sharply barred with black and bright orange alternately. Tail pale greenish brown minutely yellow dotted above. Underside pale yellowish, eye oval black, brown ringed. Tail seasonally suffused with red; throat blue; belly orange, reticulated with blue.

Length, body 6·00; tail 13·00 = 19·00 inches.

Inhabits the Malayan peninsula, Tenasserim, Pegu, and Arrakan, and found by Beddome in Kanara.

I gravely doubt if Cantor's idea that these lizards use their lax membrane as a parachute to aid their flight from tree to tree as the dragons do, is correct. The dragons, when alarmed, take flight at once, but I am perfectly familiar with this lizard and have never seen it seek a tree, or adopt any means of escape, but a hasty retreat to its burrow. *Draco* is not a burrower—*Leiolepis* is, and they are gregarious, and cuniculine in their habits as well as diet, and never ascend trees.

UROMASTIX, *Merrem.*

Tympanum naked, scales minute and granular. Tail depressed surrounded by rings of spinous tubercles, not reaching below. Throat with a transverse fold. No dorsal crest. Ventral scales smooth. Femoral and præanal pores.

U. Hardwickii, Gray.

Saara Hardwickii, Gray.

Head short, obtuse. Eye rather small. Eyelids scaly. Skin of throat very lax. Tail depressed, very broad anteriorly ringed with transverse series of spinous shields with granular interspaces. A series of eighteen femoral pores on each thigh interrupted in the pubic region.

Colour yellowish grey, clouded or waved with blackish transverse lines. Occasionally a black spot inside each femur.

Length, body 8·50; tail 6·50=15 inches (or more).

Inhabits the North Western Provinces, Synd, the Panjab, &c.

The *Uromastix* leaves its burrow, when the sun is well up, and grazes about for some time, retreating during the midday heat. Towards evening it reappears: retreating again, as the air grows chilly, and closing its burrow carefully for the night, with sand. When captured they assume a very peculiar and resigned expression of countenance, and offer little resistance when held in the hand.

Phrynocephalus has all the appearance of being a third genus of their family, but I am not certain if it is herbivorous or not.

CHAMÆLEONIDÆ.

Body vertically compressed, keeled above and below, scales granular. Tail long, prehensile. Feet zygodactylous. Eyes globular, prominent, covered by a circular lid pierced by a small central hole, capable of independent motion. Tympanum hidden. Tongue exceedingly long, wormlike, highly viscous at the tip and capable of protrusion and retraction with lightning speed. Arboreal, oviparous.

C. vulgaris L.

Ridge of back and belly denticulated. Occiput with a prominent longitudinal crest highest behind and separated from the nape by a deep groove. Colour pale green, uniform or mottled and banded with darker. Sometimes mottled with yellowish. Lays for 30 to 40 eggs. Length nearly a foot of which the tail is more than half.

Inhabits Midnapur, the Rajmahal hills, the forest tracts in peninsular India and Northern Ceylon.

These curious lizards may be easily studied in captivity, if well supplied with grasshoppers, crickets, dragon flies, blattæ and other large nutricious insects—which they seize by darting their tongue on to them from a considerable distance. The telescopic and unconnected movements of the two eyes is without parallel in any other Family of Reptiles. But one species is known in India.

Order OPHIDIA.

Body elongate limbless, or with rudimentary pelvic styles, scarcely visible externally. The ribs performing the function of locomotion. The rami of the mandible united in front by an elastic ligament. Eyelids none. Penis double, lodged (as in lizards) at the base of the tail, armed with blunt spines, tubercles, and digitiform processes, imperforate, eversile, with an external groove at the base for the conveyance of the semen. The renal secretion passed per cloacam. The majority of terrestrial species harmless, the Pelagic species, being extremely poisonous without exception.

Ophidians are divided into three sub-orders.

1st, Harmless Colubrine Snakes.

2nd, Venomous Colubrine Snakes.

3rd, Viperine Snakes.

Sub-order 1. Harmless Colubrine Snakes.

Poison gland none.

Family Typhlopidæ.

Head blunt, not distinct from the neck. Tail short. Eyes rudimentary, covered by the head shields. Scales polished imbricate. Forepart of the head covered by large shields. Upper labials four. Cleft of the mouth inferior, very small, a few teeth in the upper jaw only. Rudimentary pelvic limbs hidden beneath the skin.

Typhlops, *Dumeril et Bibron.*

Snout covered with large shields; rostal large rounded, blunt. Præocular present.

a. Fronto-nasal in contact with the second labial.

T. Horsfieldii, Gray.

The width of the upper part of the rostral is one-third that of the head. Nasal united with the fronto-nasal above the nostril. (In the closely allied Pinang species *nigro-albus* these

shields are entirely separated), its lower portion is considerably broader than that of the fronto-nasal. The fronto-nasals extend behind the rostral but remain widely separate.

Præocular sub-equal in size to the ocular, which extends as far back as the hinder labial. The first labial in contact with the rostral and nasal. The second with the nasal, fronto-nasal, and præocular. The third slightly ascends between the præocular and ocular. The fourth below the ocular. Scales of body in 26 longitudinal and about 300 transverse rows.

Colour blackish olive above, gradually passing to dull yellowish on the belly. Grows to 17 inches. Circumference $\frac{1}{10}$th of entire length.

Inhabits the Khasi Hills, Assam and Tenasserim.

T. striolatus, Peters.

Upper portion of rostral band-shaped, broader than the lower and extending to between the eyes. The nasal is partly united with the fronto-nasal above the nostril and touches the first and second labials. Fronto-nasals not contiguous behind the rostral, their lower portion as long as the corresponding part of the nasals, their hinder margin concave. The second labial in contact with the nasal, fronto-nasal and præocular. The third labial is acutely wedjed in between the præocular and ocular, which are equal. Eye very distinct. Supraorbitals and parietals broader than the frontals which are equal. Intraparietal nearly twice as broad as frontal.

Scales of body in 24 tranverse rows.

Tail shorter than head, terminating in a minute spine.

Colour olive brown above. The darker terminal part of each scale separated from the lighter base by a yellow, posteriorly dark edged transverse streak. Below paler. Grows to 12·5 inches.

Inhabits Lower Bengal.

T. bothriorhynchus, Günther.

A round groove larger than the nostril on the suture between the nasal and fronto-nasal, below the nostril; another similar

but smaller groove on the suture between the rostral and nasal. The upper part of the rostral one-third the width of the head. The lower part much longer than broad. Nasal very broad below, as broad as the frontonasal in the middle. The suture of these shields is continued above the nostril. The fronto-nasal extends a little backwards to the hinder side of the rostral and its posterior margin is deeply concave. The first labial in contact with rostral and nasal. The second, with nasal, fronto-nasal and præocular. The third slightly ascends between the præocular and ocular. The fourth, not much larger than the third, scarcely reaches further back than the ocular. All the shields on the crown are enlarged, the supraoculars and inter-parietal being rather the largest. Scales of the body in 24 longitudinal and 312 to 329 transverse rows. Colour uniform brown above and below, or with the terminal half of scales slightly paler. Grows to 11 inches. Circumference $\frac{1}{12}$th of entire length.

Inhabits Pinang, Assam (Anderson) Hardwar (Day).

T. Theobaldanus, Stol. J. A. S., B., 1871, p. 429, Pl. 25, f. 5-8.

Head shields as in *porrectus*, but the rostral reaches farther back on the top of the head and is nearly one half its width, but much narrower below. Scales of body in 22 longitudinal and 485 transverse rows. Tail long with 26 transverse rows of scales.

Colour above pale brown, pale below.

Grows to 14 inches. Circumference $\frac{1}{62}$ of the entire length.

Inhabits India. (?).

T. tenuicollis Peters, *Monatsberichte Akad. Berlin* 1864, p. 272.

Onychocephalus, (Ophthalmidion)—tenuicollis Peter, l. c.

Body very elongate, cylindrical, conspicuously thinner at the head than at the tail. Eyes not perceptible. Dorsal portion of the rostral shield a little longer than broad, rounded off, convex, nasal in front of the nostril united to the fronto-nasal, and in contact beneath with the first upper labial, and the anterior half of the second; fronto-nasal behind flatly concave. Præocular and ocular very similar in size and form, divided below by the pointed

third upper labial. Præfrontal and frontal very broad, much broader than the supraoculars and parietals which are of the same size. Interparietal no larger than the body scales, which are in 20 longitudinal rows. Tail short, as long as broad, with 12 rows of scales. Colour olive, browner above, yellowish below, the dorsal scales brownish on their largest halves, darker towards both sides, producing an appearance of dark longitudinal lines.

Said to inhabit the Himalayas.

T. porrectus, Stol. J. A. S., B., 1871, p. 426. Pl. 25, f. 1-4.

Body very slender. Head slightly broader and depressed. Rostral broader above than in front, slightly narrowed behind. The nasal touches the fronto-nasal in front towards the rostral but is disunited below. The fronto-nasals extend behind the rostral, but without meeting. The nasal is in contact with the first and second labials. The fronto-nasal touches the second labial only. The præocular is in contact with the second and third, and the ocular with the third and fourth labials. The eye is very indistinct, situated below the anterior part of the suture between the supraocular and the ocular. The first upper labial is very small, and in young specimen hardly traceable. The second distinct, the fourth considerably higher and longer than the third. All the head shield finely punctate.

Scales of the body in 18 longitudinal and in adults 440 transverse rows. Colour above pale chocolate or leaden brown above shading into paler below. Grows to 11 inches. The circumference being $\frac{1}{27}$ of the entire length.

Inhabits Hardwar, Parisnath Hill, Calcutta, Sikkim, Agra, &c.

T. Andamanensis Stol. J. A. S.,B., 1871, p. 428, p. 25, f. 9-12.

Rostral reaching far back on the head, rounded behind, slightly more than one-third of its width. Nasal small, separated from the frontonasals by a suture above and below. Frontonasals do not meet behind. Two præoculars, the lower one smallest. Ocular moderate with the eye indistinctly seen through it. An elongated subocular. First labial smallest, elongate, in contact with

nasal. Second much larger, just touches nasal, broadly the frontonasal, and narrowly the lower præocular.

The third touches the lower præocular and subocular. The fourth is slightly less than the third, and only narrowly touches the subocular, and more broadly the lower postocular.

Scales of body in 18 longitudinal and 390 transverse rows. Tail nearly three times as long as the head and terminating in a minute point.

Colour above deep brownish black, sides vinaceous. Below paler, mottled with white. Inhabits the Andaman islands.

b. The frontonasal separated from the labials by the intervening nasal and præocular shields.

T. braminus Daud.

Rostral one-third as broad as the head, not much broader above than below. Nasal entirely separate from the frontonasal, but in contact with the præocular below the frontonasal. Upper part of frontonasal almost as broad as the rostral, behind which it reaches, but without touching its fellow on the other side. Præocular and ocular equal. Eye very distinct. First labial in contact with rostral and nasal. The second with nasal and præocular but not with the frontonasal. The third slightly ascending between the præocular and ocular. The fourth below the ocular and extending farther backwards. Frontal, supraoculars, and parietals equal. Head shields with a pale crenulate margin. Body rather thicker behind than in front. Scales of body in 20 longitudinal and 316 transverse rows.

Colour uniform brown, paler below.

Grows to 8 inches. Circumference $\frac{1}{13}$th of entire length.

Inhabits Ceylon, Bengal, N. W. and Central India, Tenasserim, and the Malay Archipelago (Stol.)

T. pammeces, Günther.

T. tenuis Günther (præoc.)

Closely allied to *braminus* but of much slenderer proportions. Scales of body in 20 longitudinal and 366 transverse rows. Circumference $\frac{1}{73}$th of entire length.

T. mirus Jan.

Rostral shield half as broad as the head, its lower portion being broader than long. The frontonasal extends behind the rostral without touching its fellow. Above the nostril it is broader than the rostral. Its hinder margin is S shaped and bordered by two shields, the upper a præocular, and a lower one which is a subocular. The ocular is situated behind the præocular and above the fourth labial. The first labial touches the rostral and nasal. The second the nasal, frontonasal, and subocular, slightly ascending between these last. The third is smaller than the second, and in contact with the subocular only. The fourth is as large as the other three and in contact with the subocular and ocular.

Scales of body in 18 longitudinal and 333 transverse rows.

Body thicker behind than in front, circumference at centre $\frac{1}{16}$th of entire length.

Colour uniform brown. Snout yellow.

Inhabits Ceylon.

ONYCHOCEPHALUS, *Dumeril et Bibron.*

Rostral with a trenchant anterior edge.

O. acutus. D. et B.

Typhlops Russelii, Gray.

O. Westermanni, Lubken.

Rostral exceedingly large, covering nearly the whole of the upper surface of the head, sharp edged in front where it is slightly bent down into a rather acute point. Its lateral margin touches both eye and nostril. Head shields overlap each other, so the eye is seen through the ocular and the overlapping fronto-nasal. Præocular situated behind the lower portion of the fronto-nasal. The ocular behind its upper portion. First labial touches the rostral and nasal. The second, the nasal, fronto-nasal, and præocular. The third and fourth touch the sub-ocular.

Scales on body in 28-29 longitudinal and in 466 to 500 transverse rows. Colour light bronze, each scale on the back with a

pale centre. Yellowish below. Grows to 16 inches. Circumference in the middle $\frac{1}{14}$th of entire length.

Inhabits the Anamallay hills and the Dekkan.

FAMILY TORTRICIDÆ.

Body cylindrical with head not distinct from neck. Tail extremely short. Rudimentary pelvic limbs hidden in a groove on either side of vent. Scales smooth. The ventrals slightly larger than the other scales. One pair of frontals. Six upper labials. A mental fold.

CYLINDROPHIS, *Wagler*.

Nostril in a large plate, which forms a suture with the opposite nasal behind the rostral. Occipitals small. Eyes small with a round pupil and surrounded by a supraorbital, a postocular, two labials and the frontal.

C. rufus, Laur.

Scales in 19 or 21 rows. Sub-caudals 6-9. Colour brown. Belly with white cross bands extending up the sides (red seasonally ?). A red collar and lower part of tail during life bright red.

Grows to 30 inches.

Inhabits the Malayan Archipelago, Tenasserim, Pegu, and the Irawadi valley.

C. maculatus, L.

Scales in 21 rows. Ventrals not much larger than the adjoining scales. Sub-caudals 5-6. Colour brown above, white below reticulated with black lines and bands, a black vertebral line and an irregular lateral one. Transverse bands on the back, narrow, on the belly broad. Head and neck black, followed by a red (?) collar, an oblique white (red ?) band descends from the occipitals to the throat.

Grows to 24 inches.

Inhabits Ceylon.

It is probable that during life, at all events seasonally, the 'white' as described in this snake, is a bright red.

FAMILY UROPELTIDÆ.

Head not distinct from, but smaller than the neck. Tail short, truncated. Eyes small. Scales polished imbricate, the ventral series somewhat enlarged. One pair only of frontals, upper labials four. Cleft of the mouth moderate. Teeth in both jaws, but none on the palate. No rudimentary pelvic limbs. Habits subterraneous. Confined to Ceylon and Southern India.

RHINOPHIS, *Hemprich.*

Tail cylindrical, covered with smooth scales, and terminating in a convex scabrous shield. Head conical, nasals separated by the rostral which extends backwards. Eye in a single plate. Body thickest anteriorly and with scale in 19 rows in the middle. Head often displaced from its direct axis, as though " it had been dislocated during some effort of the snake to penetrate the soil." Günther. Viviparous.

R. oxyrhynchus Schn. Peters Uropelt, p. 9, tab. 2, f. 1.
Daypatnaya Lankadivana, Kel. Prod. II, p. 16.
Mytilia unimaculata, Gray. P. Z. S., 1858, p. 264.

Snout acutely pointed. Rostral nearly half as long as the head. Keeled above. Caudal large, convex, extending to the lower surface of the tail, as large as the heal. Ventrals 214-233, not much larger than the adjoining scales. Males with 7 or 8, females with 6 subcaudals, some simple, some bifid. Colour brown, each scale with a pale margin.

Grows to 15 inches, and is thickest anteriorly.

Inhabits Trincomali and the Kandyan District of Ceylon, living 2 or 3 feet under ground, in white-ants' nests, and like places.

R. punctatus, Müll. Peters Uropelt, p. 12, tab. 2, f. 3.
Pseudotyphlops oxyrhynchus, Schl.

Snout acutely pointed. Rostral nearly half as long as the head, keeled above. Caudal large flat, extending to the lower surface of the tail. Ventrals 228 not much larger than the adjoining scales, 7 or 8 sub-caudals. Colour yellowish, each scale

with a dark central spot. The scales next the vertebral rows unspotted.

Grows to 19 inches.

Inhabits Ceylon, where it is rare.

R. planiceps, Peters. Peters Uropelt, p. 15.

R. philippinus, Cuv.

Snout acutely pointed. Rostral much less than half the length of the head, and barely compressed above. Caudal obtusely convex, larger than the head and extending to the lower surface of the tail. Ventrals 156-174 not much larger than adjoining scales. Males with 6 entire sub-caudals, females with 4 bifid ones. Colour blackish olive, scales pale margined. Præanal scales white, with white blotches sometimes on the fore part of the body.

Grows to 16 inches.

Inhabits Ceylon, and not the Philippines, as erroneously supposed by Cuvier and the French Zoologists.

Günther considers *planiceps* and *Philippinus* identical,so that the latter name had better be suppressed.

R. Trevelyanus, Kelaart. Prod. II, p. 17.

Mitylia Gerrardi, Gray. P. Z. S., 1858.

Rhinophis homolepis, Hem. Pet. Urop., p. 14, tab. 2, f. 2.

Snout acutely pointed. Rostral much less than half the length of the head; indistinctly keeled above. Caudal obtusely convex reaching to the lower surface of the tail, and rather larger than the head. Ventrals 193-202 not much larger than the adjoining scales. Sub-caudals 4 or 5, some simple, some bifid. Colour above black, below white, each scale with a black central spot. A row of triangular white spots along each side. Tip of tail whitish.

Grows to 11 inches.

Inhabits the Kandyan district of Ceylon.

R. sanguineus, Bed. P. Z. S., 1863, p. 227.

R. microlepis, Bed., l. c.

The male is thus described by Günther.

Snout acutely pointed. Rostral one-third the length of head, obtusely keeled above. Caudal larger than the head. Barely reaching to the lower surface of the tail. Ventrals 197, twice as large as adjoining scales. Sub-caudals, single and bifid, 9 or 10 in males, or 6 or 7 in females. The last ventrals, sub-caudals and adjoining scales 4 to 8, keeled in males.

Colour uniform black above. Belly and three outer rows of scales scarlet, with some black spots interspersed. Caudal disk black, with a yellow median streak and red outer margin. A large black spot beneath the tail.

Grows to 13 inches.

Inhabits the Wynaad (Cherambady, teste Beddome) at 3,500 feet altitude.

A female from the Tinnevelly Hills may be thus described—

Scales in 19 rows anteriorly, in 15 posteriorly. Ventrals barely distinguishable from the rest, save on the throat, caudals 5 pairs, and one single terminal scale. All scales smooth. Colour above brown throughout, and brown below posteriorly, gradually changing to yellow on the fore-part, by the gradual increase in breadth of a yellow margin to the scale, till at the throat the yellow wholly replaces brown, the two colours sharply separated along the fifth outer rows of scales. A broad yellow band on either side of the tail below, with a narrow one above it, both bands just encroaching on the caudal disk when they show as a few orange spots.

The female differs so from the male, as not to be easily recognized from Günther's description, drawn up from a male.

R. Blythii Kelaart. Prod. II, p. 14.

Mytilia Templetonii, Gray. P. Z. S., 1858, p. 263 *(aged)*.

M. melanogaster, Gray. *(immature male)*.

Plectrurus Ceylonicus, Peters. Monats, 1859, p. 388.

R. melanogaster. Peters Uropelt, p. 18, tab. 2, f. 4.

Snout pointed. Rostral much less than half the length of the head. Caudal shield small, not half as large as the head. Ventrals, 150—170 scarcely enlarged. Sub-caudals bifid, 7 to 9. Colour above brownish. Belly paler, sometimes blackish. A series of 5 or 6 triangular yellowish spots, (red in life ?) united at the base by a more or less distinct longitudinal band, along each side of the body in front. A yellowish ring round the root of the tail. Grows to 14 inches.

Inhabits Ceylon, where it is the commonest species.

R. Pulneyensis, Beddome. P. Z. S., 1863; p. 228, pl. 25, f. 2.

Snout rather obtuse. Rostral rounded behind, one-fourth only as long as the head. Caudal very small, as large as the rostral. Ventrals 175 twice as large as the adjoining scales. Sub-caudals 12 in males, 6 or 8 in females. Colour brownish black, a yellow band commencing from the labials, runs along each side of the forepart of the body and is continued as a series of spots to the vent. The spots sometimes extend across the belly. A yellow line along each side of the tail, joining across the vent.

Grows to 9 inches.

Inhabits the Pulney Hills in Southern India, at an altitude of 7,000 to 8,000 feet.

R. grandis, Bed. Mad. Mon. J. M. S., 1867, p. 15, Pl. II, f. 4.

"Snout obtusely pointed; rostral shield rather acute behind produced back far between the nasals, but not touching the frontals, from one-third to one-fourth the length of the head, without any distinct keel. Caudal shield small, bicuspid, the points side by side: Trunk surrounded by 17 rows of scales, the anterior portion by 19 rows; ventrals twice as large as the adjoining series; scales of the tail and a few of the last scales of the trunk near the vent furnished with 2·3 keels. Colour of the back brownish black, belly yellowish, the yellow colour rising in triangular markings which are alternate with similar markings

of the colour of the back, the dark colouring sometimes joining these of the other side particularly in the anterior portion of the belly. Length up to 2 feet with a circumference of a man's thumb.

Anamallay forests, in moist woods, at 4,000 feet elevation.

UROPELTIS, *Cuvier.* (in part).

Tail cylindrical obliquely truncated, as if severed by a knife; the end flat, rough, scaleless. Head conical, nasals forming a suture behind the rostral. Superciliary and postocular united. Scales anteriorly in 23 rows.

U. grandis, Cuv.

U. Philippinus, Cuv.

U. Suffragamus, grandis et pardalis. Kel. Part II, p. 15, 16.

Snout pointed. Scales on the neck in 23 rows. Ventrals 138—148. Sub-caudals 7 or 8 bifid. Colour uniform brown above. Ventrals and scales of sides brown, with a broad yellowish margin. Young sometimes irregularly white spotted.

Grows to 20 inches.

Inhabits Ceylon. (Adams Peak and Matura.)

SILYBURA, *Peters.*

Tail sub-cylindrical, scales of the caudal disk provided with one or more keels; terminal scale horny, bispinous, horizontal. Head conical. Nasals forming a suture behind the rostral. Eye in a single plate.

S. macrolepis, Peters. Monats, Berl. Acad., 1861, p. 904.

Snout obtuse. Rostral without keel above, shorter than the vertical. Caudal disk flat, twice as long as broad, each scale with one or two keels. Scales in the middle of the body in 15 rows. Ventrals 137. Sub-caudals 9 pairs. Colour black. A broad irregular yellow band along each side in front, narrowing and disappearing behind. A yellow band along each side of the tail below.

Grows to 10·5 inches.

Inhabits Southern India, probably.

S. Beddomei Günther. Ann. & Mag., N. H., 1862, January, p. 56.

Snout obtuse. Rostral compressed into a slight keel above, longer than the vertical, caudal disk ill defined, nearly as long as the tail, each scale with two or three strong keels. Scales in the middle of the body in 17 rows. Ventrals 178. Five or six pairs of sub-caudals. Colour brown. Each scale on the sides with a pair of whitish dots, each ventral with a whitish spot. A yellow line along the side of the neck commencing at. the gape. Vent and tip of tail, yellow.

Grows to 11 inches.

Inhabits the Nilghiri and Anamallay Hills at from 3,000 to 4,500 feet.

S. ocellatta Beddome. P. Z. S., 1863, p. 226.

Snout pointed. Rostral much shorter than the vertical and slightly compressed above. Caudal disk twice as long as broad, each scale with three or four strong keels. Scales in the middle of the body in 17 rows. Ventrals 199, 203. Sub-caudals 8 or 10, entire or divided. Colour yellowish olive, darker towards the head and tail. Of the female dull brownish. Of the young dark purplish brown, all with numerous closely set irregular transverse series of yellow, black edged ocelli, always two on each side. Along the belly a corresponding series of yellow, black edged spots. Belly brownish.

Grows to 14·5 inches.

Inhabits the Nilghiris at Walaghat: in dense forest.

S. Elliotti, Gray. P. Z. S., 1858, p. 262.

Uropeltis Ceylanicus Cuv. Regne Anim.

Coloburus Ceylanicus, Dum et Bib. VII, p. 164, tab. 59, f. 3.

Silybura Nilgherriensis, Bed. P. Z. S., 1863, p. 226, Pl. 26, f. 1.

Snout obtusely conical. Rostral shorter than the vertical, not keeled above. Caudal disk flatttened in females, convex and ill defined in males, twice (or more) as long as broad; each scale with two or three strong keels. Scales in the middle of the body in 17 rows. Ventrals 143 to 168. Sub-caudals seven to twelve pairs. Colour brown above and below. A yellowish streak

from the gape along the neck. Sometimes some irregular yellowish spots along the sides and on the back. The lower part of the tail is encircled by a yellow band.

Grows to 11 inches.

Inhabits Southern India (Madras and the Deccan), but not Ceylon as stated by some herpetologists.

S. bicatenata Günther. Mon. I. R., p. 191, Pl. 17, f. H. H.

Snout obtuse. Rostral rounded, shorter than the nasals, vertical square. Fourth upper labial as high as long, caudal disk flat terminating in a slightly upturned bicuspid scales, each scale of the disk with one, two or three keels. Scales on the neck and body in 17 rows. Ventrals 135, sub-caudals 12 pairs. Colour black above and below, each scale on the back with a yellowish margin. A yellow band broken up anteriorly into spots, runs along the edges of the fourth and fifth outer rows of scales.

Grows to 9·5 inches (or more).

Inhabits the Dekkan.

S. Shortii Beddome. P. Z. S., 1863, p. 225, Pl. 25, f. 1.

Snout not conical, but depressed and obtuse. Eye comparatively large. Rostral shorter than the nasal. Vertical hexagonal, almost rectangular before and behind. Fourth upper labial much longer than high, caudal disk flat, well defined, not quite twice as long as broad, each scale with two or three strong keels. In the middle of the body 17 rows of scales. Ventral 139, nearly twice as broad as the adjoining scales. Sub-caudals 9 pairs. Colour black, with numerous scattered white scales. An irregular white band from the gape along the fore part of the body. A yellowish band along each side of the tail, not joined over the vent.

Grows to 8 inches (or more).

Inhabits the Sheveroy hills (Shevroys), up to 4,500 feet.

S. brevis, Günther. Mon. I. R., p. 192, Pl. XVII, f. D.

Snout obtuse. Rostral shorter than the vertical. Caudal disk flat, nearly as long as the tail. Each scale with two strong keels.

Scales in the middle of the body in 17 rows. Ventrals 122. Sub-caudals, 9 pairs. Colour above brown, below yellowish, densely marbled with brown. Sides of the throat yellowish, immaculate. The lower part of the tail black, with a broad white band on each side.

Inhabits the Anamallay and Nilghiri hills.

S. rubro-maculata, Bed. Mad. M. J. M. S., 1867, p. 15, Pl. II, f. 3.

"Caudal disk well defined as if cut off with a knife. Scales of the disk very prominently 2 keeled, terminal scale large, square at the end or very inconspicuously bicuspid. Abdominals 127, some of the last nearest the tail double; sub-caudals 8 pairs. Scales in 17 rows. Colour brownish, a portion of each scale dull yellow, the yellow colour predominating on the belly and sides. Five red blotches along the sides on the anterior portion of the trunk, and one on each side of the tail, near the vent.

Anamallay forests 4,000 feet elevation.

"Nearly allied to *S. Elliotti*, but with quite a different colouration."

S. Wood-Masoni, Theob.

Scales in 19 rows on the middle of the body. Head distorted. Disk ill-defined, scales with 2, 3, or 4 keels. Six pair of caudal shields. Mental very small, two lower labial shields, the posterior ones the same as the scales.

Colour black, brownish anteriorly. A yellow band from the gape, involving half of the fourth upper labial, continued down the neck and then broken up into yellow spots along the abdomen. Tail margined below with yellow, which unites across the vent.

Length 8·50 inches (tail 0·50).

Inhabits the Palney hills.

PLECTRURUS, *Dumeril et Bibron.*

Posterior part of the tail compressed, covered with obtusely keeled scales and terminating in a vertical bicuspid scale. Head conical. Nasals form a suture together behind the rostral. Eye between four shields.

P. Perrotetii, D. et B. VII, p. 167, pl. 59, f. 4.

Rostral as long as a nasal. Vertical elongate, much longer than broad. Scales in the middle of the body is 15 rows. Ventrals 161·162, nearly twice as broad as the adjoining scales. Subcaudals 8 pairs. Colour uniform brownish.

Grows to 14 inches.

Inhabits the Nilghiri and Anamallay hills at 7,000 to 8,000. feet.

P. Güntheri, Beddome. P. Z. S., 1863, p. 228, pl. 27.

Head flat above, with obtuse snout. Rostral considerably shorter than a nasal, with a right angle behind. Vertical elongate, nearly twice as long as broad. Body in the middle with 15 rows of scales, on the neck 17. Ventrals 172·175 nearly twice as broad as the adjoining scales. Sub-caudals 12 pairs. Colour above purple, scales paler margined. Below yellow, rising on the sides in triangular markings, alternately with similar expansion of the colour of the back. Some narrow purple stripes crossing the belly.

Grows to 14 inches.

Inhabits the Nilghiri hills at Walaghat, 3,500 feet.

R. scabricauda, Theob.

Scales in 15 rows. Eye between four shields, frontal, superciliary, postocular, and third labial. Nasals large. Caudals 8 pairs. All the scales surrounding the tail, and a few of the last ventrals are roughened with 1, 2, 3 short tubercular keels. Tip of tail flattened vertically, pustulose, simple, not cuspid. Chin, tail, and body iridescent blackish brown. The ventrals and the adjoining row of scales yellow.

Length 6·53 inches (tai[illegible]40).

Inhabits the Anamallays.

P. sanguineus, Bed. Mad. Month. J., Med. Scien., 1867, p. 14.

"Tail compressed, with the scales very obscurely keeled, terminal scale ending in a single sharp point. Head elongated. Rostral very small, nasals joined behind the rostral. Frontals very large, vertical six sided, diamond shaped. A supra-orbital and a

postocular. One elongated, temporal between the fourth labial and occipitals. Eye rather large, pupil elliptic, erect, no median groove along the chin. Scales in 17 rows. Abdominals 144. Sub-caudals 7 pairs. Colour of back and sides dull black, belly red, here and there interrupted by black markings.

Anamallay forests, 4,000 feet elevation."

P. triliniatus, Bed. Mad. Month. J., Med. Scien., 1867, p. 14, (Platyplectrurus, Günther).

" Snout rounded, not conical, cleft of mouth deep, eye large pupil round, rostral slightly produced back, nasal forming a suture behind the rostral. Supra-orbital shield present and a postocular shield distinct from the eye. One large temporal shield" (the figure shows 2) " no median groove along the chin. Scales in 15 rows; posterior portion of the tail much compressed, some of the last scales very inconspicuously 2-3 keeled. Terminal scale broad and ending in a small point, minutely tubercled above, and with a deep groove below. Body and belly of a bright brick red colour with one dorsal and two lateral black punctated, lines which extend from the neck to the end of the tail, the black dots each covering a scale. The lines are sometimes here and there interrupted by 1 to 3 consecutive scales being red. Ventrals 165. Anal bifid. Sub-caudals 18 pairs. Total length 15 inches. Circumference $\frac{3}{4}$ of an inch. The teeth are very conspicuous and gradually longer behind. There are about 8 in the upper jaw and 5 in the lower.

Anamallay forests elevation 4,000 feet."

P. Kanaricus, Bed. Mad. Monthly J., Med. Scien., 1870.

" Scales in 15 rows. Anal large bifid. Sub-caudals about 154. Snout obtuse, rostral triangular behind, produced back between the nasals; nasals forming a suture behind the rostral, vertical four sided, very pointed behind. Eye rather large, in front of a large ocular shield. Pupil round. Caudal disk laterally compressed (as in Plectrurus) each scale with 3·5 in conspicuous keels and ending in two sharp spines one above the other. Very variable in its markings but generally of a brownish colour, with

only the anterior portion of the trunk variously streaked blotched and dotted with yellow. Tail always yellow beneath. Length of the largest specimen 16 inches; girth of trunk 1½ inches."

Inhabits South Kanara, "very common on the top of Kudra Mukh" at 6,000.

From the character of its tail I have removed this species from Sihybura to Plectrurus. The describer does not describe the postocular, which is probably therefore confluent with the supra-orbital.

MELANOPHIDIUM, *Günther*.

Tail slightly compressed, covered with smooth scales and terminating in a very small smooth, slightly upturned horny point. Nasals form a suture behind the rostral. Eye in a single plate. A median groove along the chin.

M. Wynaadense, Beddome. P. Z. S., 1863, p. 228.

Plectrurus Wynaadensis, Bed. Mad. Mont. J. Med. Science.

Snout obtuse. Rostral small, convex as high as broad. Nasals large, vertical hexagonal longer than broad. The first pair of lower labials form a suture behind the mental. A pair of chin shields. Scales in 15 rows. Ventrals 180 thrice as broad as the adjoining scales. Anal large, bifid. Subcaudals 12 pairs. Colour black. Belly posteriorly black and white. Grows to 9 inches.

Inhabits the Wynaad (Nilghiris) at 3,500 feet.

M. bilineatum, Bed. Mad. Month. J., M. S. Sept. 1870.

"Fifteen rows of smooth scales: tail compressed (as in Plectrurus) ending in a single point, head rather elongate, snout rounded, mouth large, nasals forming a suture behind the rostral, frontals large produced back to a level with the eye over the ocular shield: eye very small, no supra-ocular, a median groove. Belly and back, uniform bluish black, very nacreous, and assuming all the colours of the rainbow in the sun; a broad yellow streak from the snout to the tail on each side, which occupies the whole of the second scale from the abdominals and half the first and third scales; subcaudals 14 pairs, total length eight inches; as thick as a goose quill."

Inhabits the Wynaad (*Peria* and '*Tirrhioot*' Peaks) at 5,000 feet.

M. punctatum, Bed. Mad. Month. J. M. S., December 1871.

"Snout obtuse. Rostral shield rather small, simply convex, nearly as high as broad. Nasals large forming a suture behind the rostral. Vertical hexagonal nearly as broad as long, with an obtuse angle in front and an acute angle behind. Eye in a large shield. No supraorbital or postocular, the first pair of lower labials form a suture together, behind the median shield and are followed by one large and one small pair of chin shields, the median line running between all three. Scales in 15 rows shining and smooth, or more or less covered with small glandular raised blotches. Ventrals 186-191 twice as broad as the adjoining scales, shining smooth or glandular. Anal large, bifid, terminal horny scale about 2 lines long, bicuspid in adults, slightly rough on the sides, above concave with a serrated ridge on each side; back uniform bluish black, shining, nacreous and exhibiting all the colours of the rainbow; belly and sides whitish, each of the 3 lower scales on each side with a very regular oblong black blotch, forming 3 very regular parallel lines on each side. Each ventral with a large parallelogrammoid black blotch (transverse with the oblong blotches of the side). Subcaudals 15-17 pairs, each with a black blotch."

Grows to 18 inches.

Inhabits Travankor (Mutikuli voyal in the Asamba hills, at 4,500 and at Pirmid (Peermeed).

Two species of tlenostoma, S. macrorhynchum, Jan. and S. microrhynchum, Jan. have been described from India, but I have not seen the original descriptions, nor am I sure if the species are really Indian or not.

FAMILY XENOPELTIDÆ.

Head depressed, not distinct from neck. Tail short; tapering, no rudimentary pelvic limbs. Scales large polished. Eye small. A mental fold.

Xenopeltis, *Reinwardt.*

Upper labials eight. Præocular large, replacing the absent loreal. Occipital covered by five shields. Scales in fifteen rows.

X. unicolor, Rein.

Supraorbital small, not much larger than the eye. The anterior pair and central occipitals resemble the vertical in form and size. Nasal small oblong and transversed by a suture on which the nostril is situated. Præocular very large, forming a suture with the posterior frontal and vertical. Postoculars two, equal. 8 upper labials, the fourth and fifth being produced up to form the orbit with the lower post-orbital. 7 lower labials.

Colour above uniform steel blue, splendidly iridescent; whitish below. Young ones have a white head.

Grows to nearly 50 inches, of which the tail $\frac{1}{12}$.

Inhabits the Malayan Archipelago, Tenasserim, Pegu, Trichinopoli (H. F. Blanford) the Andamans.

Family Calamaridæ.

Head not distinct from neck. Eye small with round pupil. Some of the head shields always reduced. A mental fold. Maxillary teeth equal. Palatine teeth present.

Calamaria, *Boie.*

Body cylindrical. One pair of frontals. Nasal simple, small. Loreal none, united with the frontal. One postocular. Four or five labials. Scales smooth in 13 rows. Anal entire. Subcaudals divided.

C. Siamensis, Günther.

Upper labials four. The first pair of lower labials are in contact with each other. Colour (olive) fleshy grey, with 11 very narrow longitudinal black lines down the back, the vertebral and alternate lines rather thicker than the rest. Head dark with a yellow collar behind, followed by a second black edged yellow collar, after a dark interspace less than the length of the head. Occipitals yellow with a black spot. Tail minutely yellow

tipped, with two band like yellow blotches on one side and three on the other. Beneath white, yellow on chin.

Another specimen had a conspicuous dark median line beneath the tail but no spots. In Günther's type the ventrals and subcaudals are described as densely punctated with brown, the margins remaining immaculate. Grows to 8 or 9 inches.

Inhabits Siam, Tonghu, Rangun &c.

C. catenata Blyth. J. A. S., B., 1854, p. 287.

Colour above dusky, black speckled on a pale ground. Below pale buff with an iridescent lustre, with a lateral series of square black spots mostly on alternate scuta. Four black lines above, separated by a pale mesial streak, simple on the tail but on the body broken up into a cateniform line of spots. An imperfect whitish buff collar.

Grows to 17 inches.
Inhabits Assam.

MACROCALAMUS, *Günther*.

Body cylindrical. One pair of frontals. Nasal simple. Nostril between nasal and first labial. Loreal none, united with frontal. One Præ and one postocular. Eight upper labials. Scales smooth in 13 rows. Anal entire. Subcaudals divided.

M. lateralis, Günther.

Frontals bent down to the second and third labials. The fourth and fifth labials enter the orbit, the seventh is largest. Six lower labials, the first pair touching, behind the mental.

Colour brown. A dark brown band enclosing a chain of whitish dots runs along the side, bordering the belly. Back with two series of indistinct brownish black spots and an irregular series of small black dots along each side of the belly. Beneath whitish. A blackish subcaudal band.

Length 12 inches.
Inhabits India (?)

BLYTHEA, *Theobald.*

Frontals two pairs. Loreal and præocular none, replaced by postfrontal. Nostril in a small oblong shield. Scales smooth in 13 rows.

B. reticulata Blyth.

Calamaria reticulata, Blyth. J. A. S., B., XXIII.

Præ-frontals small. Postfrontals very large, forming a suture with the nasal, second and third upper labials, the superciliary and vertical. 6 upper labials. First very small, third and fourth enter the orbit, sixth largest. Lower labials five. The first pair form a suture and are followed by a pair of very large chin shields and these by a small pair, the suture falling on the middle of the fourth lower labial. Anal bifid.

Colour shining black, brilliant and iridescent, with white specks on the sides.

Inhabits Assam.

GEOPHIS, *Wagler.*

Body cylindrical, stout. Two pairs of frontals. Two small nasals. Loreal and præocular united into one elongate shield. Rostral small, scales smooth.

G. microcephalus, Günther.

Scales in 13 rows. Back with three rows of small dark spots a dark band, white edged down either side. A yellowish streak behind the gape. Belly blackish.

Grows to 18 inches.

Inhabits the Nilghiri hills.

ASPIDURA, *Wagler.*

One præfrontal. Two postfrontals. Two small nasals. Loreal none. Scales smooth or partly keeled. Anal and subcaudals entire.

A brachyorrhos, Boie.

Calamaria scytale, Schl.

The postfrontal does not enter the orbit, but touches second and third labials. Præocular touches superciliary. The lower postocular larger than the upper. 6 upper labials. Scales smooth in 17 rows.

Colour yellowish olive with four indistinct darker longitudinal bands, and a vertebral series of black dots. An oblique black band on the side of the neck. Belly white.

Grows to 15 inches.

Inhabits Ceylon.

A. trachy procta, Cope.

The postfrontal forms the upper anterior margin of the orbit and touches the second and third labials, being generally separated from the fourth by a small præocular. The lower postocular larger than the upper. Six upper labials. Scales in 15 rows, smooth but those on either side of the vent in the male, spinous, in the female keeled (or smooth).

Colour above brown, sometimes with four or five rows of small dark spots, sometimes confluent, the mesial one along the spine being commonly present. A dark band along the side of the tail. Belly marked with black.

Grows to 15 inches.

Inhabits Ceylon.

A. Copii, Günther.

No præocular, the postfrontal forming the front of the orbit and touching the second, third and fourth labials. Postoculars subequal. Six upper labials. Scales in 17 rows, keeled on the tail and pubic region. Colour brownish, minutely dotted with black. A row of 26 pairs of black spots along the trunk, each occupying four scales and reddish margined before and behind. A black spot behind the gape, and each labial black margined behind. Belly marked with black.

Grows to 16·5 inches.

Inhabits Ceylon (probably).

A. Ceylonensis, Günther.

Haplocercus, ceylonensis, Günther.

Aspiduraz carinata, Jan.

Body very slender, scales keeled in 17 rows. Nostril between two small nasals and the first labial. 7 upper labials, the third and fourth entering the orbit.

Colour uniform blackish, or light brown, with a black vertĕbral lino, and two dorsal rows of small black spots. An oblique black edged white band on either side of neck. Below dull yellowish, immaculate.

Grows to 19 inches.

Inhabits Ceylon.

I see no adequate grounds for separating this species generically from *aspidura* as that genus presents forms with smooth and keeled scales.

FAMILY OLIGODONTIDÆ.

Body cylindrical or slightly compressed. Head short, not distinct from the neck. Scales smooth. Eye moderate with round pupip. Head ornamented with symmetrical arrow-shaped markings.

TRACHISCHIUM, *Günther*.

Scales smooth in 13 rows. Two præfrontals. One postfrontal (rarely divided). One loreal. Scales at the root of the tail and vent, keeled in the male.

T. fuscum, Blyth.

Colamaria fusca, Blyth. J. A. S., B., III, p. 288.

Trachischíun rugosun, Günther.

Præ-frontals minute. Post-frontal singlo, very large, largor than the vertical. Vertical small pointed behind. Loreal small, elongate. Præocular one. Postocular one, rather large. Upper labials six, first very small. Third and fourth enter the orbit. Sixth largest. Anal bifid.

Colour iridescent brown black, particularly lustrous below, obscurely streaked with pale lines. Grows to 19 inches.

Inhabits Dorjiling.

GROTEA, *Theobald*.

Frontals two. One anterior and one posterior. Loreal one, small. Scales smooth in 17 rows.

G. bicolor, Blyth.

Calamaria bicolor, Blyth. J. A. S., B., XXIII, p. 289.

Nostril pierced in the centre of a large nasal. Loreal small. Rostral broad. Præfrontal transverse, two-thirds as broad as rostral. Post-frontal transverse broader than rostral. Præocular one, small. Postoculars two, small. Occipitals large. Upper labials five, the third higher than the rest; enters the orbit. Fifth largest. Anal bifid.

Colour dusky plumbeous above, gradually passing into buffy white below.

Inhabits Assam and the Khasi hills.

FALCONERIA, *Theobald.*

One præ-frontal. Two post-frontals. Upper labials five. Loreal present. Scales faintly keeled in 17 rows.

F. Bengalensis, Th. J. A. S., 1868. Extra Number, p. 44. Head rather ovate and elongate, narrowed in front. Nostril almost dividing a small nasal. (Perhaps between two). Loreal one, small, squarish. Præocular very elongate. 5 upper labials. The first very small. The second and third enter the orbit. Fourth and fifth large. Anal bifid. Three undivided subcaudals, the rest divided.

Inhabits Parasnath Hill.

OLIGODON, *Boie.*

Rostral more or less extended backwards. Head shields normal, the loreal being occasionally absent. Nostrils between two partly confluent nasals. One præocular. One or two postoculars. Scales smooth in 15-17 rows. Maxillary teeth few, the last enlarged. Palatine teeth usually absent. A brown fillet crosses the forehead through the eyes, forming a distinct brown spot below the orbit; a second angular band with its apex on the occipitals, and ends passing behind the gape, and a third band on the neck, the three sometimes united by a median line.

Scales in 15 rows.

O. subgriseus, D. et B.

Loreal distinct (exceptionally united with posterior frontal). One præ and two postoculars. 7 upper labials, the third and fourth entering the orbit.

Head with symmetrical brown, black-edged markings. Back with numerous narrow irregular reticulated cross streaks, interrupted by three more or less distinct narrow whitish lines, the middle one marking the vertebral line. Belly white, occasionally each second or third scute marked with a pair of marginal dots.

Grows to 19 inches.

Inhabits the Anamally hills (Beddome), Dumerkunda, Bengal (Anderson).

O. spilonotus, Günther.

Loreal distinct. One præ and two postoculars. 7 upper labials, the third and fourth entering the orbit. Head with the usual symmetrical marks. An angular band across the forehead descending obliquely through the eye, a second on the crown, descending to the gape, separated by a yellow enterspace from a third nuchal band, as large as the head and covering the extremity of the occipitals. Back with 17 large 8-shaped black-edged brown spots. These spots are distant from each other and with some intervening black transverse stripes. Lower parts white.

Grows to 15 inches.

Inhabits Madras.

O. Elliotti, Günther.

Loreal distinct. One præ and two postoculars. 7 upper labials, the third and fourth entering the orbit. Head with markings very similar to the last. Second band confluent with nuchal spot. Back ornamented with about 37 large rhombic black spots, each of which gives off a descending process on either side. Lower parts white.

Inhabits Madras.

O. subpunctatus, D. et B.

Loreal distinct. 8 upper labials, the fourth, fifth and sixth entering the orbit. Head with the usual symmetrical markings.

Colour greyish with a dorsal series of round white-edged black spots. Belly white. Scuta black dotted on either side.

Inhabits Malabar, Manbhum and Calcutta (Anderson).

O. fasciatus, Günther.

Loreal distinct. One præ and two postoculars. 7 upper labials, the third and fourth entering the orbit. Head markings indistinct. Second band not confluent with the nuchal spot. Colour brownish olive with about 27 broadish brown black-edged cross bands, each slightly interrupted by a narrow yellow vertebral line. Belly whitish with numerous small brown spots more thickly placed along the sides.

Grows to 14 inches.

Inhabits the Dekkan.

O. sublineatus, D. et B.

Loreal distinct. One præ and two postoculars. 7 upper labials, the third and fourth entering the orbit. Colour brownish olive, a brown spot below the eye. A large brown blotch on each side of the neck. A line of small transverse light-edged brown spots down either side of the back. Each ventral scale with three brown dots forming three punctate streaks. Tail with two similar streaks.

Grows to 10 inches.

Inhabits Ceylon.

O. Templetonii, Günther.

Loreal distinct. One præ and two postoculars. 7 upper labials, the third and fourth entering the orbit. The sixth is excluded from the labial margin by the adjoning labials. Head with an indistinct band through the orbits, and a brown blotch on each side of the neck. Body bownish with a light vertebral band more distinct on the tail and crossed by 18 short narrow brown bands. Belly white with square black spots.

Grows to 10·5 inches.

Inhabits Ceylon.

O. modestus, Günther.

Loreal none. One præ and one postocular. 6 upper labials, the third largest, forming the entire lower rim of orbit. Head markings obscure. Brown spot below the eye very distinct. Colour greyish brown. A yellow vertebral band more distinct behind. Belly white with quadrangular black spots.

Grows to 13 inches.

Inhabits Ceylon (probably).

O. dorsalis, Gray.

Elaps dorsalis, Gray.

Loreal distinct. One præ and one postocular. 7 upper labials, the third and fourth entering the orbit. Head brown symmetrically marked with darker. A dark spot below the eye. Rostral yellow edged. Nuchal spot small. Body brownish grey minutely black dotted. A yellow band, two scales broad from the neck to the tip of the tail, bordered on each side with small black spots and interrupted on the tail by two or three large black spots. A narrow black line along either side of trunk. Belly white with quadrangular black spots, sometimes almost suppressing the ground colour. Tail below white in the centre.

Grows to 16 inches.

Inhabits the Khasi hills (Anderson). (Not Afghanistan.)

O. brevicauda, Günther.

Only one pair of frontals. Loreal none. One præ, two postoculars. 7 upper labials, third and fourth entering the orbit. Head with the usual markings. Body greyish violet, a pale vertebral line, becoming pure white posteriorly, and bordered anteriorly by a series of small equidistant black spots. A blackish streak along the third outer series of scales. Belly white with quadrangular black spots.

Grows to 15 inches.

Inhabits the Anamally hills.

Scales in 17 *rows.*

O. spinipunctatus, Jan.

Loreal distinct. One præ and two postoculars. 9 upper labials, the fourth, fifth and sixth entering the orbit. Colour as in *subpunctatus*, but with no ventral dots.

Inhabits Bengal. (?)

O. affinis, Günther.

Loreal none. One præ and two postoculars. 7 upper labials, the third and fourth entering the orbit. A broad median streak unites bands on the head. Nuchal band very narrow, crescentic. Colour brownish grey. Back crossed by 38 short black streaks, half a scale broad. Belly white with subquadrangular black spots.

Grows to 10·5 inches.

Inhabits the Anamally hills.

SIMOTES, *Dumeril et Bibron.*

Rostral shield more or less enlarged truncated, bent and extended backwards. Anterior frontals narrow, transverse. Nostril between two nasals. Scales smooth. In the Indian species in 17 or 19 rows. Some from Siam and China in 21. Maxillary teeth few; the last, longest. Palatine teeth present. Head symmetrically ornamented much as Oligadon.

These snakes form a very natural group, but the colouration is very variable, and the differences whereby species can be discriminated are somewhat trivial. The precise separation of some closely allied species cannot be satisfactorily attempted till a larger series is available for examination from India and the countries east of the Bay of Bengal, some of which species are doubtless local representatives of some of those found in the Indian region, and races rather than species.

Scales in 17 *rows, Anal bifid. Loreal none.*

S. albiventer, Günther.

S. purpurascens var A.

Loreal none, confluent with the hinder frontal. One præ and two postoculars. 7 upper labials, the third and fourth entering

the orbit. Colour uniform greyish brown above, whitish below. A dark spot below the eye.

Grows to 24 inches. (Tail 3·5 inches.)

Inhabits Ceylon.

S. venustus, Jerdon.

Loreal none, confluent with hinder frontal, the lower angle of which touches the second labial. One præ and two postoculars. 7 upper labials, the third and fourth entering the orbit. The sixth is excluded by its fellows, from the labial margin. Colour greyish, or reddish brown, with three rows of black rounded yellow edged spots, each spot of the vertebral series being 8-shaped and formed of two smaller ones united. The lateral spots more oblong and irregular. Head with symmetrical markings. Belly white with quadrangular black spots. Colours nearly equally checquered.

Grows to 16 inches.

Inhabits Western India.

Scales in 17 *rows. Loreal present. Anal bifid.*

S. Russellii, Daud.

Coluber arnensis, Shaw.

C. monticolus, Cantor.

Loreal distinct, but *sometimes confluent* with the hinder frontal. One præ and two postoculars. 7 upper labials, the third and fourth entering the orbit. Colour brownish olive with bands on the head very distinct, and body crossed with white edged black bars. Belly white. The bars vary from one to three scales broad, and in number from 17 to 30 or thereabouts.

Grows to 25 inches. (Tail about 5.)

Inhabits the Eastern and Central Himalaya, Bengal, Peninsular India and Ceylon.

S. binotatus, D. et B.

Xenodon dubium, Jerdon.

One præ and two postoculars. 7 upper labials, the third and fourth entering the orbit. Head with three angular white, black-

edged bands. The first crosses the snout to the lip and passing below the eye unites with the second band. The third occupies the neck and occiput, its light portion being heart-shaped. Back with a double series of brownish grey black edged lozenges, confluent at their internal angles, and a lateral row of smaller spots. Belly white.

Inhabits North Kanara.

S. cruentatus, Theobald. Lin. Soc., Jour., Vol. X.

Loreal small. Nasals large. One præ and two postoculars. 7 upper labials, the fourth and fifth entering the orbit. Tongue red. Colour above uniform umber brown, the colour extending over the ends of the ventrals. Beneath yellowish white with numerous square black blotches. Tail beneath bright coral red, black mottled. Head symmetrically marked. Some specimen have a narrow dark line on each side of the spine and another lower on the sides. The anal is sometimes bright red, followed by a black bar.

Grows to 15·25 inches. (Tail 2·25.)

Inhabits Pegu.

Closely allied to the Siamese *tæniatus*, but differs in its single præocular, bifid anal, and colouring.

S. semifasciatus, Anderson. J. A. S., B., 1871, p. 16.

Loreal longer than high. Two præ and two postoculars. 8 upper labials, the fourth and fifth entering the orbit. Upper postocular wedged between the superciliary and the occipital Anal (?). Colour uniform brown above with 50 obscure, irregular, narrow, transverse black bands, formed by the black margins of the scales, not continued on to the second row. Below dull yellowish with numerous quadrangular black spots, obscure anteriorly. All the scales minutely brown dotted.

Grows to 8·5 inches. (Tail 2·3.)

Inhabits the Naga hills.

S. Theobaldi, Günther. An. & Mag., 1868, Vol. I, p. 417.

Scales in 17 rows. One præ and two postoculars. Loreal much longer than high. 8 upper labials, fourth and fifth entering the orbit. Anal bifid. Colour above brown with a light vertical line commencing on the occiput and dividing the black nuchal spot. A pair of light lines down the back along the fifth outer row of scales. Back crossed by numerous narrow reticulated black streaks. The outer two rows of scales olive coloured. Abdomen with square black spots.

Scales in 19 *rows. Anal entire. Loreal present.*

S. punctulatus, Günther.

Coronella puncticulatus, Gray.

Sinotes purpurascens, Günther. vars D. and E.

Two præoculars, equal, and often confluent. Two postoculars. 7 upper labials, the third and fourth entering the orbit. The second labial sometimes divided. Belly black blotched. Colour brown, either crossed by numerous straight light, black edged bands, about two scales broad, or crossed by irregular lines formed by the black edges of some scales (*as in Oligodon subgriseus*) or with some 22 pairs of pale black edged spots down the back, more or less confluent with age, or uniform without markings.

Grows to 36 inches.

Inhabits the Eastern and Central Himalayas, Assam, the Khasi and Jyntea Hills.

S. bicatenatus, Günther.

Two præoculars, the lower being much smaller than the other. 7 upper labials, the third and fourth entering the orbit. The second labial sometimes divided. Ventrals keeled. Colours variable; uniform brown with a very narrow pale vertebral stripe, with some indistinct marks caused by the black edges of some scales. Each ventral with a black marginal dot. Also occurs pale reddish brown salmon coloured on the sides. A pale vertebral stripe, not a scale broad, bordered by a dark band and

another below it on the sides. Belly white, salmon red on the centre. Scuta with marginal dots. Also uniform brick red, some black edged scales alone showing. Belly yellowish with ill-defined spots at the ends of the scuta. Head with the usual symmetrical markings.

Grows to 31·5 inches. (Tail 4.)

Inhabits Pegu and Tenasserim (Theob.), Garo Hills and Calcutta (Anderson).

S. albocinctus, Cantor.

Two or three præoculars, the upper much the largest. Two postoculars. 8 upper labials, the fourth and fifth entering the orbit. Colour brown with 18 white dark edged cross bands and a pair of fine black transverse lines in each interspace. Head with the usual markings which are pale and dark edged. Ventrals alternately marked with quadrangular brown spots.

Inhabits the Khasi hills.

S. amabilis, Günther. An. & Mag., 1818, Vol. I, p. 416.

Scales in 19 rows. One præ and two postoculars. Loreal square. 7 upper labials, the third and fourth entering the orbit. Anal entire. Back with forty-one narrow black edged yellow cross bars, with others less distinct on the tail. Bands one scale broad or a trifle more. Beneath white with an irregular series of blackish spots along either side of belly.

Length 10 inches.

Inhabits the Arakan hills.

Family Colubridæ.

Body moderate. Head distinct from the neck. Eye moderate. Sub-caudals divided. A mental groove.

Group Coronellina. Ground Colubrides.

Colubrine snakes of small size and smooth scales.

Ablabes.

Body cylindrical, somewhat slender. Head distinct from the neck. Rather depressed, of moderate length. Eye moderate with

round pupil. Two nasals usually. One loreal. Scales smooth in 13, 15 or 17 rows. Anal bifid. Sub-caudals divided. Teeth small, numerous, equal.

A. tenuiceps, Blyth.

Scales in 13 rows, keeled in males, in the ischiatic region. Loreal much longer than broad. One præocular. Two postoculars, the upper largest. 6 upper labials, the third and fourth entering the orbit, the sixth largest. Colour above uniform blackish ash. Below whitish.

Grows to 14 inches. (Tail 2·).

Inhabits Nipal and Sikkim and North-Western Bengal.

This species presents the keeled ischiatic scales in the male also seen in *Trachischium fuscum* a calamarid, whilst this species having normal head shields ranges under *Ablabes*. Both species were at one time united under *Trachischium* by Günther and seem to represent forms uniting the two families Calamaridæ and Colubridæ.

A. scriptus, Blyth.

Coronella scripta, Blyth.

Scales in 13 rows. Loreal one, much smaller than a postocular. Præocular one. Postoculars two, small. 8 upper labials, the third, fourth and fifth entering the orbit. Colour above brown. A few black dots on either side of the spine, anteriorly. A black mark under the eye, followed by a white upright border, involving the postoculars. A black bordered white patch on the last upper labial and a white collar on the nape. Beneath white.

Inhabits Martaban.

A. Rappii, Günther.

A. Owenii, Günther.

Scales in 15 rows. Loreal square. One præocular just reaching the top of the head, two postoculars. The occipital does not extend down to the lower postocular. 6 upper labials, the third and fourth entering the orbit. Colour uniform dark bronze brown, or blackish above, whitish below. In young specimens

the colour is paler and there is a black collar, and vertical black bars on the sides anteriorly.

Grows to 23 inches. (Tail 5.)

Inhabits the Himalayas from Simla to Dorjiling.

A. olivaceus, Beddome.

Scales in 17 rows. Anterior frontals small. Posterior large, twice as broad as long, bent downwards on the sides. Nostril in a shield divided below, but not above. Two small præoculars. Two postoculars. 5 upper labials, the third forming the lower edge of the orbit. Colour dark greenish olive, paler below. A series of distant small black dots along each side of the back with another less distinct lower down on the side.

Grows to 20·5 inches. (Tail 4.)

Inhabits Marrantoddy in the Nilghiri hills.

The nasal of this species is aberrant and quite that of *Psammophis condanurus.*

A. sagittarius, Cantor.

Scales in 17 rows. One præocular. The occipital extends laterally to the lower postocular. 7 upper labials, the third and fourth entering the orbit (the second sometimes divided). Colour reddish or greyish olive, darker on the sides, the paler colouration of the back being bordered by a blackish line. A vertebral series of black dots. Head brown above. A broad black or dark brown collar edged with yellow. Belly white with a black dot on the end of each ventral. During life the belly is of a citrine colour with a blue lateral band.

Grows to 12 inches. (Tail 2.)

Inhabits Pinang, Tirhut, and Kangra valley.

A. bistrigatus, Günther. An. & Mag., N. H., 1868, p. 416; Theobald. Jour., Lin. Soc., Vol. X.

Closely allied to *Humberti* in all particulars and in possessing two posterior temporals instead of one. Colour: Head black emitting a distinct black band on either side continued to the tip of the tail. Two yellow spots on the nape. A yellow dot

on each occipital and some yellow marks about the head. A chain of black spots on the neck, continued as a line of black dots to the tip of the tail. Back ruddy brown, the red tinge fading posteriorly. Sides greyish. Belly yellow. Body 7·80. Tail 3·00 = 10·80.

Taken at Prome. The above description taken from life differs slightly from Dr. Günther's taken after the animal had been a year or more in spirit.

A. Humberti, Jan.

Calamoria sagittaria, Jerdon (not Cantor).

Enicognathus Humberti, Jan.

Scales in 17 rows. One præocular. Two postoculars. The occipital extends laterally to the lower postocular. 10 upper labials, the fourth, fifth and sixth entering the orbit. The eighth is excluded by its fellows from the labial margin. Colour reddish olive, darker on the sides, the pale colouration of the back being bordered by an indistinct punctated line. A vertebral series of yellow edged black dots. Upper part of the head brown. A dark yellow edged collar. Belly white. Ventrals with a black dot at each end.

Grows to 17·5 inches. (Tail 4.)

Inhabits Peninsular India and Ceylon.

A. collaris, Gray.

Psammophis collaris, Gray.

Scales in 17 rows. Loreal rather longer than high. One præocular. Two postoculars. The occipital does not reach down to the lower postocular. 10 upper labials, the fourth, fifth, and sixth entering the orbit. Colour brown above, white below. A vertebral series of black spots, anteriorly. A narrow black band between the eyes and another across the back of the occipitals. A black collar yellow margined behind on the nape, from the ends of which a black line runs through the eye to the nostrils. Frontals, vertical, and superciliaries, with a central black spot and two on the rostral. Ventrals with a black

splash on either end, and anteriorly a pair of median dots also. Lips black spotted.

Grows to 32 inches. (Tail 10.)

Ranges from Simla to the Khasi, Garo and Jyntea hills and round to the Arakan range (Nioungjo), and Upper Burmah and Yunan.

A. Nikobariensis, Stol. J. A. S., 1870, p. 184.

Præfrontals broader than long, half the size of the posterior. Vertical sub-trigonal, large, with a very short point in front and rapidly contracting behind, larger than the superciliaries. Each occipital one-fourth larger than the vertical, and extending to the lower postocular. Loreal and postnasal united. Præocular one, large, squarish. Postoculars two, small. Upper labials 7, the third and fourth entering the orbit. Posterior labials divided in two. The first pair of labials form a suture followed by two pair of sub-equal chin shields, Anterior half of body reddish brown above, posterior blackish grey. Head above blackish. The three first labials with yellow spots. A short yellow streak from the eye to the gape. A black collar, yellow margined with an interrupted yellow band, more distinct before. An undulating row of dark dorsal spots. Sides grey marbled, rounded above with a line of closely set black spots, then dusky. Below yellowish with a red tinge. Ventrals black spotted.

Grows to 17·50 inches. (Tail 4·50.)

Inhabits Kamorta (Nikobars).

CYCLOPHIS, *Günther*.

Form rather slender. One nasal shield pierced by the nostril. Rarely two nasals. Scales smooth in 15 rows. Eye moderate with round pupil.

C. frænatus, Günther.

C. monticola, Blyth (not Günther).

Rostral broader than high. Præfrontals much broader than long, sub-quadrangular, not quite half as large as the postfrontals. One præocular. Two postoculars. Loreal square

7 upper labials, the third and fourth entering the orbit. Anal bifid. Crown of the head and back uniform olive. A broad black band begins behind the eye, gradually narrowing and disappearing at less than half the length. A dark streak runs from the throat along the outer edges of the ventrals, of equal length with the last. Below uniform yellowish.

Grows to 27 inches. (Tail.)

Inhabits the Khasi hills and Mesopotamia.

C. calamaria, Günther.

Rostral shield as high as broad. Præfrontals rather broader than long. Postfrontals much broader than long. Loreal shield none, united with the nasal. One præocular. Two postoculars. 7 upper labials, the third and fourth entering the orbit. Anal bifid. Colour brownish grey above, each scale with two minute indistinct brown streaks at the base. The scales on each side of the back black edged, forming small irregular spots more or less confluent posteriorly. Below white. In very young specimens a black bar crosses the occipitals.

Grows to 14 inches. (Tail 4.)

Inhabits Ceylon.

C. nasalis, Günther.

Very like *calamaria*, but has two præoculars. Colour greyish olive above. A slightly curved black streak on each side of the neck, followed by a series of black spots, confluent with a band running along the edges of the fifth and sixth outer rows of scales, disappearing on the tail. A dark line disappearing anteriorly marks the edges of the third and fourth outer rows of scales. Below whitish.

Grows to 16 inches. (Tail 4.)

Inhabits India.

C. monticola, Cantor.

Rostral shield narrow, much higher than broad. Præfrontals twice as broad as long and one-third as large as the postfrontals. Nostril an oblique slit directed forwards in a single nasal plate

which is not much larger than the loreal. Loreal oblong rather larger than the single præocular. Two subequal postoculars. 6 upper labials, the third and fourth entering the orbit, the last as large as the fourth and fifth. Anal bifid. Colour olive brown with a bright yellow collar, and a whitish vertebral line. Below citrine yellow.

Inhabits the Naga hills.

C. catenatus, Theob. J. A. S., B., 1868. Extra No. p. 49.

Præocular one. Postoculars two, the lowest very minute. Loreal small. 6 upper labials, the third and fourth entering the orbit. Anal entire. Colour yellowish brown, many scales black spotted, forming obscure lines down the body. Belly yellowish white, each ventral with a terminal black dot, forming a conspicuous chain down each side of belly.

Inhabits the Western Himalayas near Simla.

C. rubriventer, Jerdon. P. A. S., B., March 1870, p. 80.

The nasal large, posteriorly obliquely slit to its edge. One præocular. Two postoculars. 6 upper labials, the three last subequal. Colour brown with a pale lateral band from the eye to the tip of the tail and below it a mottled brown and yellow band. Chin, throat, and neck yellow, the rest of the lower parts red.

Inhabits the Khasi hills.

C. Oldhami, Theob.

Chlorophis Oldhami, Theob. J. A. S., B., 1868. Extra No. p. 50.

Nasals two. Præocular one. Postoculars two. Loreal elongate. 8 upper labials, regularly increasing in size, the fourth and fifth enter the orbit. Chin shields two pairs, in contact with six labials. Second lower labial very small. Colour above uniform bronze brown (in spirit).

Inhabits the Western Himalayas near Simla.

On account of its divided nasals, I had originally ranged this snake under a separate genus, but as Jerdon has since described a species with a *partly divided* nasal, I think it better to retain it as an aberrant form of *Cyclophis.*

Odontomus, *Dumeril et Bibron.*

Form slender, strongly compressed. Scales smooth in 13 or 15 rows. Ventrals angularly bent on the sides. Nostrils in a single shield divided by a more or less distinct suture. Two præoculars, the lower sometimes united to the loreal. Maxillary and palatine teeth sub-equal, none grooved. The anterior mandibular teeth but little enlarged. Eye moderate. Pupil round.

O. nympha, Daud.

Rostral nearly twice as broad as high. Præfrontals sub-quadrangular, more than half as large as the post-frontals. Post-frontals broader than long. Nasal sub-divided. The loreal generally united with the lower præocular. 8 upper labials, the third and fourth entering the orbit. Scales with an apical groove. Anal bifid. Colour white with 38 rounded broad brown bands, each about thrice as broad as the interspace. The first band occupies the head, the second the neck, with a white collar intervening. Head sometimes entirely yellowish.

Grows to 17 inches. (Tail 3·5.)

Inhabits Southern India, Vellore.

O. semifasciatus, Günther.

Rostral somewhat broader than high. Præfrontals sub-quadrangular more than half as large as the postfrontal. Nasal sub-divided, the suture under the nostril being very indistinct. Loreal longer than high. Two equal præoculars. Two postoculars. 7 upper labials, the third and fourth entering the orbit. Scales with an apical groove. Anal bifid. Colour white, with 50 rounded dark brown bands, each twice as broad as the interspace. The first pair separated by a collar as in *nympha.*

Inhabits ———— ?

O. gracilis, Günther.

Rostral twice as broad as high. Præfrontals quadrangular, two-thirds the size of the postfrontals. Two nasals. Loreal united with the lower præocular. Upper præocular small. Two

postoculars. Scales without apical groove. 8 upper labials, the fourth and fifth entering the orbit. Colour white with 38 broad round dark brown cross bands, twice or thrice as broad as the interspace. Interspace marked with brown. Collar as in *nympha.* Below white.

Grows to 21 inches. (Tail 4.)

Inhabits the Anamallay hills, Waltair, &c.

CORONELLA, *Laurenti.*

Form cylindrical not compressed. Eye moderately large with round pupil. Two pairs of frontals. Two nasals. One loreal. One præocular. Scales smooth. Sub-caudals bifid.

C. orientalis, Günther.

Rostral rather broader than high. Frontals of moderate size. Vertical not quite twice as long as broad, with lateral margins parallel and with a pointed posterior end. Occipitals not much larger than the vertical. Loreal square. Two postoculars, the lower between the eye, and the fifth and sixth labials. 8 upper labials, the fourth and fifth entering the orbit. Anal bifid. Scales in 17 rows, without apical grooves. Colour greyish brown. Two indistinct narrow dark lateral streaks on either side posteriorly, coalescing on the tail. A very narrow white collar on the neck. Belly white, with sub-quadrangular blackish spots.

Grows to 11 inches. (Tail 2.)

Inhabits the Dekkan. (Col. Sykes.)

NYMPHOPHIDIUM, *Günther.*

Characters of *odontomus,* but the three last maxillary teeth very strong and trenchant. *Two bony prominences project through the mucous membrane of the mouth, one behind the other.*

N. maculatum, Günther.

Rostral rather broader than high. Præfrontals quadrangular, obliquely truncated in front, more than half as large as the post-

frontals. Nostril between two small nasals indistinctly separated by a suture. Loreal long, entering the orbit, below a small præocular. Two postoculars. 7 upper labials, the third and fourth entering the orbit. Anal entire. The three last maxillary teeth very strong and trenchant. *Two obtusely conical white prominences on the base of the skull not covered by the mucous membrane of the mouth.* Colour light brown, with two dorsal rows of rounded dark brown spots, confluent anteriorly, and decreasing towards the tail. Sides brown spotted. Below whitish.

Grows to 12 inches. (Tail 2·75.)

Inhabits India (?). (General Hardwicke's collection.)

A single specimen only is known. The functional office of the curious bony prominences in this and the following genus would seem to be to ensure the fracture, during deglution of any birds eggs the animals may have found. The utility of such an adaptation is undoubted, as Günther records having found the uninjured eggs of parrots in the stomach of a Dipsas.

ELACHISTODON, *Reinhardt.*

Scales smooth in 15 rows. Those of the vertebral series enlarged. Nasals two. Pupil round. Loreal enters the orbit, beneath a small præocular. *Gular and œsophageal teeth formed by the projection through the mucous lining of the œsophagus, of the elongated inferior processes of the hinder cervical vertebræ.*

S. Westermanni, Rein.

Two postoculars. 7 upper labials, the third and fourth entering the orbit. Anal entire. Colour brown above with a yellowish vertebral stripe. A yellow band from the snout over the head on either side to the temporals and gape. An angular yellowish cross band on the neck. Below yellowish.

Grows to 31 inches. (Tail 4·5.)

Inhabits Rangpur.

Group Colubrina. True Colubrides.

Snakes of moderate or large size, fairly proportioned, being neither very slender, stout or flattened. Teeth generally subequal and scales keeled.

CADMUS, *Theobald.*

Head thick cuneiform. Body stout. Scales smooth in 27 rows. Anal bifid. Eye moderate. Pupil round.

C. cuneiformis, Theob. (J. A. S., B., 1868, Extra No. p. 58.)

Rostral large, running well back on the top of the head and encroaching between the præfrontals. Nostril between two nasals. Præfrontals very small. Postfrontals large. Loreal small, triangular with apex between præ and postfrontals. Præocular one, large. Postoculars three. 7 upper labials, only the fourth enters the orbit. Head high, shelving in front, pointed, stout, and cuneform. A large pair of chin shields in contact with five labials, followed by a small pair. Colour yellowish olive brown. An obsolete band of spots on either side of the spine, and below, a second strongly defined band of black spots, many of them like an open horseshoe, four scales apart. Below dusky white with an elongate dusky streaky spot at the side at every fourth or fifth ventral.

Recorded as from Simla.

COLUBER, *Linnæus.*

Form rounded above. Tail one-fifth or less of total length. Eye moderate with round pupil. Nasals two. One præocular. Ventrals not keeled. Anal bifid.

C. porphyraceus, Cantor

Psammophis porphyraceus, Cantor.

Coronella callicephalus, Gray.

Scales smooth, without apical groove, in 19 rows. Loreal longer than high. One præocular in contact with the vertical. Two small postoculars. 8 upper labials, the fourth and fifth entering the orbit. Anal bifid. Ventrals scarcely extending up

on the sides. Colour brownish olive, with 22 very broad dark, black edged cross bands. A narrow black streak commences, behind the middle of the trunk and runs along each side of the back to the tip of the tail. A median black streak on the crown A black streak from the orbit to the first cross band. Belly whitish. In the young the cross bands are black, white edged, and reach to the belly.

Grows to 29 inches. (Tail 5·5.)

Inhabits Assam, Dorjiling, the Khasi hills, Yunan.

C. Nuthalli, Theob. J. A. S., B., 1868, Extra No., p. 51.

Scales smooth in 23 rows. Nostril small, between two large nasals. Præocular one, very large, touching the vertical. Postoculars two, small. Loreal small longer than broad. 9 upper labials, the fifth and sixth entering the orbit. On one side a small piece of the fourth is detached and enters the orbit. Superciliaries very large, almost equalling the vertical. Colour reddish grey with four rows of elongate rhomboidal intensely black spots, each enclosing a pale ocellus. These spots disappear posteriorly and on the tail are replaced by four deep brown bands, two broad upper ones and two narrow lower ones, separated by narrow white bands. An oval black spot from the eye to the gape.

Inhabits Pegu.

COMPSOSOMA, *Dumeril et Bibron.*

Form elongate, compressed. Eye moderate with round pupil. Scales keeled, with apical grooves. Præocular usually one. Anal usually entire.

C. semifasciatum, Blyth. J. A. S., B., 1861, p. 114.

Scales smooth in 19 rows, each with two minute apical grooves. Head distinct from neck, large and remarkably depressed. Rostral broad below, deeply indented. Præfrontals two-thirds the size of the postfrontals. Nostril between two rather large nasals. Loreal with the lower hind angle pointed. Two præoculars, the upper touching the vertical, the lower

small, being really only a detached portion of the third labial. Postoculars two, the upper the largest. 9 upper labials, the fifth and sixth entering the orbit. Anal bifid. Colour above pale olive grey, transversely dark barred and spotted. A horseshoe mark with the ends directed backwards on the occipitals. A pale elongate lateral ocellus on each occipital. Ventrals with a marginal black dot anteriorly, markings become obsolete posteriorly. Belly whitish or with a slight dusky tinge.

Inhabits the North-Western Himalayas, Simla and Subathu.

C. melanurum, Schl.

Scales keeled in 19 rows. Rostral broader than high. Præfrontals not quite half as large as the postfrontals. One præocular. Two postoculars, sometimes confluent. 9 upper labials, the fourth, fifth and sixth entering the orbit. Anal entire. Colour anteriorly brownish, passing posteriorly into black. A yellow vertebral band broadly edged with black on the anterior part of body behind the neck. A short black vertical streak below the eye Another from the orbit to the gape. A third runs obliquely from the temporal region to the edge of the belly ending in about five distant black blotches. Belly yellow before, black behind. Markings more distinct and developed in young specimens.

Grows to 65 inches. (Tail 14·5.)

Inhabits the Malayan archipelago, the Andamans, &c.

C. radiatum.

Scales keeled in 19 rows. Rostral broader than high. Præfrontals not quite half as large as the postfrontals. Loreal longer than high. One præocular extending nearly to the vertical. Two postoculars. 9 upper labials, the fourth, fifth, and sixth entering the orbit. Anal entire. Colour pale, but rich red brown. Interstitial skin of the neck lavender. Of the anterior part of the body black, with white reticulations, passing into plumbeous and pale grey towards the tail. Three inches from the head (in a 73 inch male), four black stripes commence abruptly, two on each side, and taper off to about the centre of the body. The pale vertebral interspace covers four scales, the

uppermost stripe three, the lower stripe one, with an interspace of two scales from the upper. Sides of the body dark slaty extending to the belly. Middle of belly white clouded with slaty. Beneath tail, yellowish. Eye grey. Pupil black narrowly margined with gold.

Grows to 73 inches. (Tail 14.)

Inhabits Sikkim, the Khasi hills, Assam, Pegu, Tenasserim, and the Malayan Peninsula, Java, Sumatra, &c.

When enraged this snake contracts its neck vertically, preparatory to striking, thereby displaying its finely coloured interstitial skin. It is called the 'rat snake' in Pegu, from frequenting houses in search of rats.

C. reticulare, Cantor.

Scales keeled in 21 rows (19). Rostral as high as broad. Præfrontals nearly half as large as postfrontals. Loreal longer than high. One præocular, an additional small præocular sometimes detached from the fourth labial. Two postoculars, the upper sometimes united with the superciliary. 8 upper labials, the fourth, fifth, and sixth entering the orbit. Anal entire (bifid once in 20). Colour blackish brown. Behind black with numerous narrow whitish cross bands, more distinct posteriorly. Bands sometimes indistinct or form only reticulated spots. Belly yellowish marbled with black, sometimes wholly black. Sometimes an indistinct pale lateral band. In this species some of the cephalic shields are always united.

Grows to 46 inches. (Tail 9.)

Inhabits the Himalaya Mountains, the Khasi and Garo hills, &c.

C. Hodgsonii, Günther.

Scales in 23 rows, those on the back feebly keeled, with two apical grooves. Rostral as high as broad. Præfrontals half as large as postfrontals. Loreal longer than high, sometimes confluent with the frontal. One large præocular. Two postoculars. 8 upper labials, three of which enter the orbit, but two or three are often confluent. Anal bifid. Colour uniform brownish

olive. Skin and margin of some scales, black. Lower parts yellowish. Some of the ventrals blackish near their base and ends.

Grows to 63½ inches. (Tail 13·5.)

Inhabits the Western Himalayas and Nipal.

CYNOPHIS, *Gray*.

Form somewhat slender and compressed. Eye moderate. Pupil round. Nasals two. One præocular. Scales slightly keeled or with a pair of apical grooves in 25 to 27 rows. Anal entire.

C. Malabaricus, Jerdon. J. A. S., B., 1854, p. 530.

Rostral as high as broad. Præfrontals broader than long, one-third the size of the postfrontals. Loreal longer than high, irregularly quadrangular. One præocular sometimes touching the vertical. Two postoculars. 9 upper labials, the fourth, fifth, and sixth entering the orbit. Scales smooth in 25 rows, with a pair of apical grooves. Colour light brownish olive with some 22 black cross bands, less than one-half as broad as the interspaces and disappearing posteriorly, each band enclosing six white ocelli. Each band terminates in two black lines on each side which come down to the ventrals to meet the similar lines of each adjoining band on either side. The first band forms a white black edged collar. A broad brown band runs along the hinder part of the trunk and the tail. A short black vertical streak below the eye, and another behind the eye along the suture of the seventh and eighth labials.

Grows to 15 inches. (Tail 3.)

Inhabits Malabar (Jerdon), Anamallay hills (Beddome), the Nilghiri hills, &c.

C. Helena, Daud.

Head narrow. Snout long obtusely rounded. Rostral broader than high. Præfrontals small, a third or fourth of the size of the postfrontals. Loreal longer than high. One præocular, generally touching the vertical. Two postoculars. 9 upper labials,

the fifth and sixth and sometimes the fourth entering the orbit. The fourth labial sometimes divided. Scales very slightly keeled in 27 rows. Colour reddish olive with numerous reticulated black transverse bands anteriorly, each of which encloses two white ocelli on either side, one above the other. Posteriorly these ocelli are replaced by a broad lateral brown band running to the tip of the tail. Neck with a pair of parallel longitudinal black bands above, and with an oblique black band on the side. A black line along the occipital suture, and another oblique one from the eye along the seventh labial. Lower parts white.

Grows to 42 inches. (Tail 8.)

Inhabits Ceylon and Southern and Central India.

PTYAS, *Fitzinger*.

Form elongate, scarcely compressed. Eye large. Pupil round. Nasals two. Anal bifid. Scales smooth or partly keeled in 15 to 17 rows.

P. hexagonotus, Cantor.

Xenelophis hexahonotus, Cantor (Günther, gen.)

Body and tail hardly compressed. Præfrontals as long as broad, more than half the size of the postfrontals. Loreal one quadrangular, rather longer than high with its hinder angle wedged between the præoculars. Præoculars two, the upper largest. Three postoculars, the lower equalling the other two. 8 upper labials, the fourth entering the orbit. The fifth small equal to the first. Anal bifid. Scales smooth without apical grooves, the vertebral row enlarged, hexagonal. Brown with black cross bands in the young. Belly yellowish.

Grows to 62 inches. (Tail 25.)

Inhabits Arakan, the Malayan Peninsula, &c.

P. mucosas, L.

Body and tail scarcely compressed. Præfrontals nearly half as large as the postfrontals. Loreals three, one above, two below. (A Ceylon specimen, Günther says had one only). Two præoculars, the lower small. Two postoculars. 8 upper labials, the

fourth and fifth entering the orbit. Anal bifid. Scales in 17 rows (on neck in 19). The vertebral series rather enlarged. A pair of apical grooves. Scales on the back usually keeled in 7 rows. Keels often faint or absent. Colour light brownish olive. The scales with dusky margins, more deeply edged posteriorly, producing a reticulated appearance, on the hind part of body and tail. Shields of the head black margined.

Grows to 91 inches. (Tail 25) Blanford.

Inhabits Peninsular India and Ceylon, Arakan, Pegu and Tenasserim, Upper Barmah, Yunan, the Andamans, and the Malayan Archipelago.

P. korros, Rein.

Very like *mucosus*, but scales smooth in 15 rows. Vertebrals not enlarged. A pair of apical grooves. Scales faintly keeled posteriorly. Loreals two, one behind the other. Two præoculars, the lower small. Two postoculars. 8 upper labials, the fourth and fifth entering the orbit. Colouration as in the last.

Grows to 86 inches. (Tail 28). Another specimen 70 inches. (Tail 25.)

Inhabits Sikkim, Assam, Arakan, Pegu and Tenasserim, the Malayan Archipelago, and Southern China.

mucosas and *korros* are closely allied, so that it is not sometimes easy to decide to which a specimen belongs. *korros* however seems to have a more restricted range to the westward.

ZAMENIS, *Wagler*.

Form elongate. Head distinct from neck, flat. Eye moderate with round pupil. Nostril between two nasals. The shields of the head exhibit a tendency to sub-division. Loreal one. Generally two, præ and two postoculars. Eye sometimes in contact with detached pieces of the upper labials. Scales smooth or faintly keeled. Ventrals with a very indistinct lateral keel.

Z. ventrimaculatus, Gray.

Coluber diadema, Blyth (not Schl).

Gonyosoma dorsale Anderson. P. Z. S., 1872, p. 395.

Præfrontals nearly as large as postfrontals. Occipitals truncated behind, with a small semicircular shield following. Loreal

quadrangular. Two præoculars, the lower small, the upper touching the vertical. Two postoculars. 9 upper labials, the fifth and sixth entering the orbit. Scales ovate, smooth, without apical grooves, in 19 rows. Anal bifid. Colour yellowish olive with distinct narrow black cross bars on the back, each half as wide as the interspace. A lateral row of small black spots. Belly yellowish with an irregular row of black dots on each side. A black band between the eyes, an oblique streak below them, another on the temples. A dark loreal spot and black median line on the neck.

Grows to 50 inches.

Inhabits India, probably Western; and Mesopotamia.

Z. gracilis, Günther.

Præfrontals half as large as postfrontals. Occipitals rounded behind. Loreal square. Two præoculars, the lower small, the upper in contact with the vertical. Two postoculars. 9 upper labials, the fifth and sixth entering the orbit. Scales elongate, narrow, smooth in 21 rows, some with a pair of indistinct apical grooves. Anal bifid. Ventrals faintly keeled at the sides. Colour yellowish olive with a single row anteriorly of large brown round spots, edged with black, the spots gradually disappearing, their black edges remaining as cross bars, posteriorly, and spots on the tail. A black streak across the snout. A brown black edged bar between and below the eyes and another across the occipitals. An irregular series of black spots on each side of the belly, which is yellow.

Grows to 33 inches. (Tail 10.)

Inhabits Synd and the Dekkan.

Z. fascidatus, Shaw.

Coluber hebe, Daud.

C. curvirostris, Cantor.

Tyria fasciolata, Cope.

Rostral broader than high, protruding. Præfrontals more than half as large as postfrontals. Loreal square. A large præocular in contact with the vertical, usually a minute præocular, below

detached from the third labial. Two postoculars. 8 upper labials, the fourth and fifth entering the orbit, the fifth highest. Scales elongate, smooth with a pair of apical grooves in 21 or 23 rows. Anal bifid. Colour during life, olive green above, almost uniform in adults, or with numerous transverse white bars, one scale broad edged posteriorly with dark brown on the anterior part of the body, branched and reticulated on the sides. Below greenish white.

Grows to 41 inches. (Tail 9.)

Inhabits Southern India, Bengal, and Province Wellesley.

Z. brachyurus, Günther. An. & Mag., N. H., 1866, Vol. p. 27.

Habit of a small *dromicus*. Eye small. Præfrontals half as large as postfrontals. Occipitals rounded behind. Loreal square. One præocular touching the vertical. Two postoculars. 8 upper labials, the fourth and fifth entering the orbit. Scales elongate, smooth in 23 rows. *Anal entire.* Scuta 225 not keeled. Caudals 46. Colour alive uniform olivaceous above and whitish below (Blanford). The type (in spirits) displayed irregular brown spots on the head and fore part of trunk, ranged in longitudinal series and narrowly edged with yellow. Anterior ventrals brownish, edged behind with yellow.

Grows to 21·5 inches. (Tail 3.)

Inhabits Punah and South-East Berar.

Z. diadema, Schl.

Periops parallelus, Jan. et Sor.

Præfrontals rather larger than postfrontals, which are separated from the vertical by a transverse row of four small shields. Loreals three or four. One præocular reaching to, or nearly to the vertical. A row of small shields below and behind the orbit. Upper labials small about 14. Scales ovate, keeled in 27, 29 rows. Anal entire. Ventrals keeled at the sides. Colour yellowish olive with a dorsal series of round brown spots and a double row of short brown longitudinal streaks along each side. Shields of snout brown spotted. A brown cross band between the orbits continued to the gape. A horse-shoe band on the occipitals.

Grows to 60 inches. (One of 36 inches had a tail of 8.)

Inhabits Afghanistan (Günther), Synd and the North-West of India.

ZAOCCYS, *Cope.*

Form elongate, compressed. Head distinct from neck. Eye large. Pupil round. Two præoculars. Two postoculars. Scales in 14 or 16 rows. The median rows keeled.

Z. nigromarginatus, Blyth.

Coryphodon dhumnades apud Jan. et Sor., No. 24, pl. 4.

Loreal longer than high. 8 upper labials, the fourth and fifth entering the orbit. Scales elongate, acutely pointed, in 16 rows, the four middle rows keeled. Anal bifid. Colour green above, paler below. Two broad deep black bands commencing one-third from the head and running on either side to end of tail. The upper bands are separated by the two half scales of the median row.

Grows to 96 inches. (Tail 27.)

Inhabits Nipal, Sikkim and the Khasi hills.

HERPETOREAS, *Günther.*

Form compressed. Head elongate, rounded before, flat above. Eye moderate. Pupil round. Nasals two. One præocular. Two postoculars. Scales slightly keeled in 19 rows. Ventrals strongly bent up at the sides. Anal bifid.

H. Sieboldii, Günther.

Rostral broader than high and rounded superiorly. The præfrontals pentagonal and one-half (or rather more) as large as postfrontals, which are bent down at the side. Nostril between two largish nasals. One loreal, smaller than a nasal. Præocular one, large, but does not touch the vertical, and with a minute shield beneath it in some specimens detached from the third labial. Postoculars two, small. 8 upper labials, the third, fourth and fifth (or sometimes the fourth and fifth only) enter the orbit, Scales in 19 rows slightly keeled on the back. Anal bifid. Colour uniform greenish brown, below yellowish, or with a black band

down each side of the back, separated by five scales, and a lower narrower band, separated by two scales from the last. A black streak from the eye to gape.

Grows to 37 inches. (Tail 9 or longer.)

Inhabits Sikkim.

Günther described from a single specimen. A second from which I have taken some details of colouration was in the possession of A. Grote, Esq., and another in the Museum of the Asiatic Society, Bengal. (See Catalogue, J. A. S., B., 1868, p. 54.)

TROPIDONOTUS, *Kuhl.*

Head distinct from the neck. Eye moderate. Pupil round. Nostril lateral between two plates. Shields of head regular. Loreal one. Anal bifid. Scales generally keeled, usually 17—19 rows, sometimes more.

T. punctulatus, Günther.

Eye large. Præocular one. Postoculars three. Præfrontals small and pointed. 9 upper labials, the fourth and fifth entering the orbit. Scales smooth in 15 rows (on the neck in 17). Colour very variable. Adult males above dark umber, beneath white, the two colours sharply separated. Upper labials white. A dark line down each side formed by the dark tips of the ventrals and the hind part of each lowest row of scales. Adult females light brown, much mottled with yellow, which sometimes predominates.

Inhabits Pegu.

T. zebrinus, Blyth. J. A. S., B., 1855, p. 295.

One præocular, three postoculars. Labial plates with a triangular black spot at the upper junction of each pair. Colour above plumbeous, obscurely black spotted. The sides and under parts yellowish white, the former throughout banded with black, each band with a white spot above. Two or three distinct black bands across the nape. Described from a young specimen of 10·4 inches.

Inhabits Mergui.

T. platyceps, Blyth.

Zamenis Himalayanus, Stein.

Head rather depressed, distinct from the neck. One præocular (sometimes divided). Two postoculars. 8 upper labials, the third, fourth, and fifth entering the orbit. Scales in 19 rows, feebly keeled in the males. Smooth or with the median rows only faintly keeled in the females. Colour in males above dark brown, with a long elliptical mark on the neck, and two rows of small blackish spots along the back anteriorly. Below yellowish, finely mottled with dusky green, and a distinct blackish band on each side. A coral red band along the ends of the ventrals. In females the colours and marks are less distinct.

Grows to 30 inches. (Tail 8·5.)

Inhabits Kashmir, Kulu, Nipal, Sikkim, and the Khasi hills.

T. macrops, Blyth. J. A. S., B., 1855, p. 296.

T. macrophthalmus, Günther.

T. Sikkimensis, Anderson. J. A. S., B., 1871, p. 17.

Eye large. Præfrontals obtusely rounded in front. One præocular. Three postoculars. Loreal large. 8 upper labials, the fourth and fifth entering the orbit. Scales keeled in 17 rows, (19 on the neck), transversely disposed on the neck as in *Naja*. Colour brown, uniform or with a dorsal series of reddish brown spots. Neck with an indistinct arrow-mark. Belly anteriorly marked with large quadrangular brown spots, posteriorly and under the tail, clouded with brown. Neck sometimes greenish and body with black and yellow reticulations. (*Sikkimensis.*)

Grows to 39 inches. (Tail 7.)

Inhabits Sikkim and the Khasi hills.

Dr. Stoliczka has demonstrated the identity of both *Macrophthalmus* and *Sikkimensis* with this snake, this last form being often more lively coloured than the type.

T. angusticeps, Blyth. J. A. S., B., 1855, p. 295.

Head narrow, hardly broader than the neck. Præorbitals two, three or four. Postorbitals four or five. Scales keeled in 17 rows. Colour above plumbeous, uniformly spotted with black

throughout. Below whitish, posteriorly variegated with black. A V mark on the nabe with its point towards the occiput.

Grows to 41 inches. (Tail 8·5.)

Inhabits Assam and Arakan.

T. nigrocinctus, Blyth. J. A. S., B., 1856, p. 717.

The penultimate and preceding labial very large. Scales keeled in 17 rows. Colour reddish brown passing into greenish on the neck and head. A black stripe beneath and another behind the eye to the gape, and a broad black patch on either side of the neck. A yellow collar sometimes present on the neck. Along the back numerous narrow black cross bars (50), not well defined. Below white dusky towards the tail, the posterior ventrals being gradually more broadly dark margined posteriorly.

Grows to 26·5 inches. (Tail 6·5.)

Inhabits Pegu and Tenasserim.

T. quincunciatus, Schl.

T. piscator, Jerdon. J. A. S., B.

T. umbratus, Cantor.

T. Tytleri, Blyth.

T. striolatus, Blyth. Apud Theobald.

Coluber mortuarius, Daud. (Günther, An. & Mag., 1872, Vol. IX, p. 27).

Nostrils valvular, indicative of its essentially aquatic habits. Præfrontals pointed. One præocular. Three or four postoculars. Loreal large, square. 9 upper labials, the fourth and fifth entering the orbit. Scales keeled, in 19 rows. Colouration variable. Above, some shade of greyish, brownish or greenish olive with from three to seven rows of black spots down the body in quincuncial order. Some specimens are ornamented with red spots on the sides, with dark bars between, these bars being best marked in the young. In others the black spots have dissolved into a asterisk of black lines with yellow dots intermixed. An oblique black streak crosses the temples and eighth labial and another the lower postocular and the suture of the sixth and

seventh labials. Belly white, the ventrals dusky margined in front. Feeds on fish and frogs.

Grows to 51 inches. (Tail 11·5.)

Inhabits Peninsular India, Ceylon, Assam, Arakan, Pegu, Tenasserim, the Andamans, and the Malay countries, Mesopotamia and Southern China.

T. junceus, Cantor.

T. dipsas, Blyth. J. A. S., B., 1855, p. 297 & 716.

Head narrow, distinct from the neck. Eye rather large. Præfrontals truncated in front, half as large as the postfrontals. One præocular. Three narrow postoculars. 9 low upper labials, the fourth, fifth and sixth entering the orbit. Scales keeled in 19 rows. Colour greyish olive, with a row of well defined whitish spots along each side of the back. Belly white. Ventrals and sub-caudals with a marginal dot. Lips and throat gamboge. A gamboge streak from the gape to the nape forming an acute angle.

Grows to 27 inches. (Tail 7·3.)

Inhabits Sikkim, Assam, Pinang, &c.

T. Beddomei, Günther.

Spilotes vittatus, Beddome. Mad. Q. J., Med. Sci., Vol. V.

Head moderate. Eye rather large. Præfrontals obtusely rounded in front half as large as postfrontals. Occipitals nearly as long as vertical and postfrontals. Loreal square. One præocular. Three postoculars. 9 upper labials, the fourth, fifth and sixth entering the orbit. Scales strongly keeled, in 19 rows. Colour brown. A row of short transverse streaks of orange, along either side of back. A narrow yellow cross bar behind the occipitals. Labials edged with black. A yellowish, black edged band from the eye to the gape. Belly white, its sides and the sub-caudals dotted with brown.

Inhabits the Nilghiri hills.

T. bellulus, Stoliczka.

Form slender, body a little compressed. Præfrontals smaller, but a triple longer than postfrontals. Occipitals very large.

Nasals large. One narrow præocular. Three postoculars. 9 upper labials, the fourth, fifth and sixth entering the orbit. Scales narrow, sharply keeled, in 19 rows. Colour olive brown, with two longitudinal series of black dots along the back. Sides of neck yellow barred, on a black skin. A yellow black edged spot on each occipital, and a third on their suture behind. Præ and postoculars bright yellow. Upper labials greenish yellow, black edged behind. Below greenish white. Ventrals and subcaudals black edged.

Inhabits the Pegu range, west of Tonghu.

T. subminiatus, Rein.

One præocular. Three postoculars. Loreal square. 8 upper labials, the third, fourth and fifth entering the orbit. Scales keeled in 19 rows. Colour olive brown, passing into yellowish green on the neck and head. Interstitial skin of neck bright vermilion (seasonal). Body anteriorly handsomely reticulated with black and yellow. The colours equally bright in both sexes. A black collar yellow margined behind, in young specimens.

Grows to 42 inches. (Tail 10·5.)

Inhabits Sykkim, the Khasi hills, Assam, Pegu, Arakan, Yunan, Tenasserim, Java, &c.

T. stolatus, L.

Præfrontals pointed in front, One præocular. Three (rarely four) postoculars. Loreal square. 8 upper labials, the third, fourth and fifth entering the orbit. Scales keeled in 19 rows. Colour brownish olive with numerous reticulated cross bars, intersected by two very pale buff or stone colour longitudinal dorsal bands. Seasonally the head, neck and sides are deeply suffused with vermilion.

The colouration of this snake is not easy to describe, the longitudinal bands being perhaps its most prominent feature, but the pattern of ornamentation is decidedly reticulate, often brightly set off with red and yellow.

Grows to 24 inches. (Tail 12.)

It is called 'Halhallia' in Bengal, and is one of the commonest snakes in the country.

T. monticola, Jerdon.

Form slender. Head narrow. Eye large. Præfrontals truncated in front, half as large as postfrontals. One præocular. Three narrow postoculars. Loreal large square. 8 upper labials, the third, fourth and fifth entering the orbit. Scales keeled in 19 rows. Colour green, with 28 black bands across the trunk, each band broken into three spots by two longitudinal bands of the ground colour, a white dot marking the points of intersection. The first cross-band occupies the occiput and is white-edged in front. A pair of white dots between the eyes and a black dot on the suture between the fifth and sixth upper labials. Below white.

Inhabits the Wynaad.

T. Himalayanus, Günther.

Præfrontals truncated in front, half as large as postfrontals. Loreal square. One præocular. Three postoculars. 8 upper labials (sometimes 9), the fourth and fifth entering the orbit. Scales strongly keeled in 19 rows. Colour brownish olive above, with two dorsal rows of numerous small quadrangular transverse yellow spots, more distinct posteriorly. A bright orange yellow collar on the neck, behind which the trunk is reticulated with yellow fading posteriorly into white. Chin and throat yellow. Belly clouded with brownish, passing posteriorly into blackish brown throughout.

Grows to 31 inches. (Tail 8.)

Inhabits Nipal and Sykkim.

T. Ceylonensis, Günther.

Præfrontals obtusely rounded in front, half as large as postfrontals. Loreal square. Two præoculars, nearly equal. Three narrow postoculars. 8 low upper labials, the fourth and fifth entering the orbit. Colour brownish olive above. A row of about 20 yellow ocelli edged with black along each side of the

body; the black edges expanding into bands reaching to the belly below and over the back to the occelli on the other side. Belly yellowish, greyish behind. A broad black band stretches from the eye to the gape, and is continued along the side. This species is closely allied to *T. chrysargus* from Java.

Inhabits Ceylon.

T. plumbicolor, Cantor.

Xenodon viridis, D. et B.

Amphiesma brachyurum. Jan. No. 29, Pl. 3.

Form stout. Præfrontals more than half the size of postfrontals. Two præ and three postoculars. 7 upper labials, the third and fourth entering the orbit. Scales in 23, 25 or 27 rows. Colour dirty greenish, below whitish, a blackish band on each side of the neck. In the young, a broad yellow collar pointed in front and forked behind with a similar black band in front. An oblique black streak behind the eye, and ten or more narrow black cross-bars on the body. Sides of throat black dotted, and belly more or less blackish.

Grows to 25 inches. (Tail 3.)

Inhabits Southern, Central and North-Western India, Ceylon and Bengal (as far east as Sahibganj).

ATRETIUM, *Cope.*

Body somewhat stout. Eye moderate. Pupil round. A single triangular præfrontal. Two nasals, with the nostril in the upper part of the suture. Scales rhombic, keeled in 19 rows. Anal bifid.

A. schistosum, Daud.

Præfrontal as large as a postfrontal. Loreal higher than long. One præocular. Three postoculars. 8 upper labials, the third and fourth entering the orbit (when 9 labials, the fourth and fifth enter the orbit). Scales in 19 rows. Those of the dorsal region keeled. Colour above very dark blackish olive. The labials, two outer rows of scales and the lower parts uniform

yellowish. Young specimens with a dark stripe from the orbit along the anterior part of the body.

Grows to 25 inches or more. Tail 3 inches.

Inhabits Ceylon, Southern India, Bengal and the Malayan Peninsula.

XENOCHROPHIS, *Günther*.

Body stout. Pupil round. Nostril in the upper part of a single plate. Scales keeled in 19 rows. Anal bifid.

X. cerasogaster, Cantor.

Head narrow elongate. All the shields of the upper part are elongate. Præfrontals rather pointed in front, not much smaller than the postfrontals. Nasal quadrangular, entire, pierced in the middle of its length by the nostril. Loreal large. One præocular. Three postoculars, the lowest largest, sometimes divided. 9 upper labials, the fourth entering the orbit. Colour above brown, sometimes uniform, sometimes a pair of light dorsal bands, with or without indistinct dark quadrangular spots. Lower parts cherry red, dark marbled or wholly black. A bright yellow lateral band from the snout to the top of tail. Occiput with sometimes a pair of yellow spots.

Grows to 24 inches. (Tail 6.)

Inhabits Bengal, Assam, the Khasi hills.

Günther describes the colour as purple below, but I prefer to follow the indication afforded by the specific epithet as probably based on observation of a fresh specimen.

GERARDA, *Gray*.

A single anterior frontal. Loreal square. Scales smooth, rhombic in 17 rows. Superciliary small. Eye over the fourth labial. Tail conical. Caudals divided.

G. bicolor, Gray.

Colour muddy olive. Lips (except rostral which is dark), chin and a lateral stripe 2½, scales broad, whitish. Belly pale, scuta dark edged.

A male captured at Rangoon measured: body 11·00, tail 1·50=12·50.

Inhabits Pegu (Theobald) (not the *West* Indies, as stated in the British Museum Catalogue of Snakes, 1849, p. 77) and Ceylon (Furguson).

CANTORIA, *Gerard.*

Body long and slender. Head not distinct from the neck. Anterior frontal single. One loreal. Eye small and surrounded by a circle of orbital plates. Scales smooth in 19 rows.

C. Dayana, Stol. J. A. S., 1870, p. 208.

Rostral pentagonal, broad, deeply indented below, very narrow above with concave sides. Anterior frontal almost linear, touches the rostral and scarcely longer than the two large elongate quadrangular nasals. Five high upper labials, the suture of the third and fourth being below, but not entering the orbit. One narrow and high præocular, and two postoculars, the lower joining the præocular. Anal bifid.

Colour above dull yellow, with numerous bluish black bands with interspaces narrow above, wider below. Head dark on the top, with a yellow band across the posterior frontals, and a few yellow spots on occipitals and vertical.

Bellow pale yellow with a dusky greenish tinge along the centre of belly.

Length 30·50 inches. (Tail 3·5.)

Inhabits Estuaries of Pegu (mouth of Maulmein River).

FORDONIA, *Gray.*

Body stout, cylindrical. Head depressed, not distinct from neck. One anterior frontal. Eye small, with vertical pupil.

Scales smooth in 25 to 29 rows.

F. bicolor, Theobald. Jour. Lin. Soc., Vol. X.

Scales in 25 rows. Occipitals large. One præocular. Two postoculars. Anterior frontal small. Loreal none. Upper labials 5. Eye over the fifth.

Colour yellowish grey, dark spotted. Sides and belly white, colours distinctly separated.

Inhabits Pegu (Rangun).

I separate this from the next which has not yet been recorded from India, as in Gray's description (Viperine Snakes, p. 77) he describes the occipitals as *small*. Günther does not mention them or the loreal either, and there is also the difference in the upper labial which enters the orbit. Still the two are closely allied. My type was a young one of 10·75 inches. (Tail 1·25.)

F. unicolor, Gray.

Hemiodontus chalybæus Jan. Canest. Arch. Zool., III, p. 264.

Scales in 25, 27, or rarely in 29 rows. Anterior frontal much longer than broad, rather smaller than a posterior frontal. Five large upper labials, the third entering the orbit. One præocular. Two postoculars. Colour above uniform dark ash. Beneath whitish, which involves the three outer rows of scales.

Grows to 25 inches. (Tail 3 inches.)

Inhabits Pinang.

HYPSIRHINA, *Wagler*.

Habit moderate, with rather depressed head, and tail compressed at the root in males. A single præfrontal. Nostril in a single shield divided externally by a groove. Eye small, with round pupil. Scales smooth in 19 to 23 rows.

H. plumbea, Boie.

H. Hardwickii, Gray.

Head distinct from neck. Habit stout. Præfrontal as large as a postfrontal. Loreal higher than long. One præocular. Two postoculars. 8 upper labials, the eye over the fourth, the fifth excluded from the orbit (or nearly so). Colour brown with a well defined dark edged yellow stripe. Sometimes a row of black dorsal spots. Belly pale grey with a central dark cateniform stripe, formed by a dark dot in the middle of each ventral. A narrow dark line along the ends of the ventrals and another down the suture of the subcaudals.

Grows to 21 inches. (Tail 2·75.)

Inhabits Pegu and Upper Barmah, also Java, Borneo, Celebes, Formosa, Southern China, Pachebone and the Malayan Peninsula.

H. enhydris, Schn.

Homalopsis aer, Boie.

H. olivaceus and enhydris, Cantor.

Hypsirhina furcata bilineata and trilineata, Gray.

Form slender or stout; variable. Head rather elongate and subtriangular, distinct from neck. Præfrontal much broader than long. Loreal squarish. One præocular. Two postoculars. 8 upper labials, the fourth entering the orbit. Colour variable.

Above dark hair brown, olive tinted, and with a blue iridescence. Down each side from the occipitals to the end of the tail a pale stripe, margined above and below with a dark line. Sides and belly yellowish white. Along each side a supra-abdominal stripe of pale salmon red. Scuta and scutella dark edged, giving rise to two lateral lines and a median one below the tail.

Grows to 28 inches. (Tail 5·50.)

Inhabits Bengal, Southern India, Pegu, Tenasserim, the Malayan Peninsula, Borneo, Java, &c.

Cantor says a female he had for six months in confinement produced eleven young ones alive. A female however killed by me in March near Rangoon contained six eggs (the rest having been probably laid), so that additional observations are desirable to determine if there is no error in one of the above statements. Can Cantor's specimen have been the nearly allied H. Jagorii described from Siam, which mainly differs from the present in having 128 ventrals only in place of 160 or thereabouts?

FERANIA, *Gray*.

Habit stout. Head short. Nostil in a single plate externally divided by a groove. Two very small præfrontals. Eye small, with vertical pupil. Scales smooth in 29 rows.

F. Sieboldii, Schl.

Feranoides Jamnœticus, Carlleyle. Jas. XXXVIII, p, 196.

Hypsirhina Bocourti. Jan. et Sor. No. 28, pl. 5, f. 2.

Head rather distinct from neck. Tail short. One præocular. Two postoculars. 8 upper labials, the fourth entering the orbit. 13 lower labials, the sixth the largest, the last five very small. Colour pale brown, with over thirty large brown black edged spots, with narrow interspaces down the back, and on either side a row of triangular dark brown spots alternating with the last. Belly and sides yellow, the former black chequered.

Grows to 25 inches. (Tail 4.)

Inhabits Bengal (Ganges and Jumna), Pegu, Province Wellesley.

HIPISTES, *Gray.*

Head short, distinct from the neck. Body stoutish. Tail short, compressed. Eye very small, directed upwards. Pupil vertical. Nostril in a single shield with a groove externally. Nasals separated by a narrow præfrontal. Scales smooth in 39 rows. Ventral sharply keeled.

H. hydrinus, Cantor.

Hipistes fasciatus, Gray.

Bitia hydroides, Gray.

Præfrontals cuneiform, much longer than broad. Postfrontals very small, hexagonal. Two pairs of small occipitals with a small central shield. Loreal large. One præocular, which does not touch the vertical. Two postoculars, the lower largest and touching the præoculars. 7 upper labials, the fourth being below the suture between the præ and postoculars. Colour greenish yellow above, broadly barred with blackish grey. 44—58 bars as broad as the interspaces, but not reaching to the belly. Sides and belly white, or yellowish.

Grows to 21·5. (Tail 1·5), Anderson. (19·3. Tail 2·2, Günther).

Inhabits mouths of rivers and coast of Pegu, Pinang, &c.

This species has quite the colouration of a Hydrophis, though probably an estuary rather than an open sea species. It is however largely captured in company with great numbers of Hydrophis in the sluice nets (or creels) in the Bassein river below Gnaputau.

CERBERUS, *Cuvier*.

Body cylindrical. Tail rather compressed. Head high. Eye small with vertical pupil. Snout only, shielded, the occiput scaly. Nostril between two nasals, the anterior being largest and forming a suture. Anterior frontals small triangular. Eye surrounded by a ring of small orbitals. Scales keeled in from 21 to 25 rows.

C. rhynchops.

Loreal as large as a postocular. One præocular (sometimes divided). Two postoculars. One infraocular. Upper labials 9 or 12. The fifth below the infraocular and the last five small. Colour above blackish ash, slightly greenish, with irregular black cross-bars. The two or three outer rows of scales yellowish. Labials black spotted.

Grows to four feet, though specimens more than 3 feet are rare. Tail one-fifth of length.

Inhabits the coasts of India and Barmah, and the Malayan Peninsula, the Andaman and Nikobar Islands.

HOMALOPSIS, *Günther*.

Habit stout. Head depressed, triangular, distinct from neck. Eye small with vertical pupil. Nostril in a single nasal divided by a groove from the nostril outwards. Anterior frontal small (rarely divided). Eye surrounded by a ring of small orbitals. Posterior upper labials transversely divided into two or three. Scales striated and keeled in 37 to 47 rows.

H. buccata, L.

H. (*Pythonia*) *semizonata*, Blyth.

Anterior frontal broader than long, smaller than a postfrontal. Loreal longer than high, sometimes divided. One or two

præoculars. Two postoculars. Infraocular very narrow. Upper labials high, the fifth or sixth below the infraocular. Colour brownish olive, with narrow greyish black-edged cross-bars. A brown triangular patch on the snout, a roundish spot on each side of occiput, an oblique streak from the præocular to the neck. Belly and some of the outer rows of scales yellowish. Usually a row of black spots along the sides of belly.

Grows to 42 inches. (Tail 10.)

The head shields of this species are subject to great irregularity. A specimen taken by me in Pegu had 5 frontals. It was 25 inches long. Colour a rich brown with 34 sharply defined whitish bars across the back, and the head symmetrically marked with black.

Inhabits Pegu, Tenasserim, the Malayan Peninsula and Java.

FAMILY ACROCHORDIDÆ.

Habit moderate. Body covered with small wartlike not imbricate scales. Tail prehensile.

CHERSYDRUS, *Cuvier*.

Tail vertically compressed. Scales tubercular in over 100 rows. One row of scales on either side of the median line of the belly, spinous, forming a double serrated ventral keel.

C. granulatus, Schn.

Acrochordus fasiatus, Shaw.

Colour above dark grey, the colour descending in regular stripes to the belly, where it fades. Belly yellow, ascending in regular stripes to the back, the pale and dark stripes alternating regularly, though occasionally forming annuli.

Grows to 37 inches. (Tail 3·75.)

Inhabits mouths of rivers and the coast of Pegu, Southern India, the Malayan Peninsula, New Guinea, Philippines, &c. This species is very numerous in the Bassein river below Gnaputau and seems to connect *Hydrophis* with the *Homalopsidæ*, being wholly aquatic, as its flattened tail shows. The embryos according to Cantor are over 10 inches long.

Family Psammophidæ.

Head very distinct from the neck, with the loreal region concave. Scales smooth in 15 to 19 rows. Subcaudals divided. One præocular. Two postoculars. One of the anterior maxillary teeth longer than the rest.

Psammophis, *Boie.*

Head rather long and pointed. Superciliaries prominent. Anal bifid. Pupil round.

P. condanarus, Merr.
P. taniata, Gths.
Leplophis Bellii, Jerdon.
P. Indicus, Beddome.
Phayrea Isabellina, Theob.

One præocular not reaching to the vertical. Nasal *single;* oblong reaching to the top of the head, pierced somewhat posteriorly by a moderate nostril, with an oblique slit to the first labial. 8 upper labials, the fourth and fifth entering the orbit. Scales smooth in 17 rows. The abdominal row larger than the rest. Colour buff or yellowish. Isabelline brown (the colour of the dirty smock of Isabella the "catholic") with a dark stripe, two broad scales down either side of the back from head to tail, and a broader dark stripe on either side of the belly. Belly yellowish, the colours being strongly contrasted, the lower edge of the dark side stripe passing through the middle of the abdominal row of scales.

Grows to 40 inches. (Tail 8·5 or more.)

Inhabits the Punjab, the Nullay Mullay hills, Pegu.

Dr. Günther describes the nostrils as between *two nasals,* hence my inability to refer my Pegu specimens correctly, till I had examined the types in the British Museum. Strangely enough, I was unable to satisfy myself of there being two nasals in the specimens I there saw, though another gentleman, attached to the establishment, in the most obliging manner confirmed the description of Dr. Günther to my face. A very well qualified observer however. Dr. Stoliczka thus writes on this point—

"The nostril is, in all specimens which I have examined, in one long shield. It is situated almost centrally, and a distinct slit divides the lower portion of the nasal, but the upper is *entire*, though generally a faint groove extends from the nostril to the upper margin of the shield." J. A. S., B., part II, 1870, p. 196.

P. Leithii, Günther. P. Z. S., 1869, p. 505, pl. 39.

Habit of *condanarus*. Præfrontals small. Postfrontals longer than broad. 8 upper labials, fourth and fifth entering the orbit. One præocular which reaches to the vertical. Scales in 17 rows. Anal entire. Colour light reddish olive with four brown black edged longitudinal bands. The two dorsal ones running to the end of the snout along the occipital and superciliary shields. A narrow brown median line along the vertical shield and occipital suture. The belly and lower half of last row of scales white.

Grows to 26·50 inches.

Inhabits Synd.

Stoliczka suggests if this is more than a var of the last. J. A. S., B., 1871, part II, p. 439.

PSAMMODYNASTES, *Günther*.

Head short; lips swollen anteriorly. Loreal region concave; superciliaries prominent. Præfrontals very small. Nasal single. Anal entire. Pupil erect. Scales smooth in 17 rows, without apical groove. Viviparous. Anterior teeth long, fang-like.

P. pulverulentus, Boie.

Lycodon Bairdi, Stein. Nov. Rep., p. 90.

Dipsas ferruginea, Cantor.

Præ and postfrontals small. Superciliaries larger than the vertical. Two præoculars, the upper large, the lower very small. Two postoculars. 8 upper labials, the third, fourth, and fifth entering the orbit. Colour uniform dark umber brown, with some irregular light reddish patches down the back, and some black spots. Head symmetrically marked. Throat, belly, and tail brown, chest yellowish. Body bordered below with orange. Throat white spotted and each alternate ventral

white dotted at the ends. Iris brown, pupil black, narrowly edged with gold.

Another specimen was uniform ochraceous, with a few indistinct blackish marks along the back. Below bright yellow, with two filiform dotted streaks of deep reddish brown along the sides. Anderson says the former dark colouration is that of females, and the light peculiar to males.

Grows to 21 inches. (Tail 4·5.)

Inhabits the Khasi and Jyntea hills, Sykkim, Assam, Pegu, Tenasserim (Java, Sumatra, and the Philippines).

FAMILY DENDROPHIDÆ.

Form compressed, slender, elongate. Head narrow, depressed, distinct from the slender neck. Snout obtuse. Eye moderate or large with round pupil. Scales narrow, imbricate. Ventrals keeled.

GONYOSOMA, *Wagler*.

One præocular. Two postoculars. Loreal sometimes absent, otherwise head shields regular. Scales smooth or very faintly keeled. Anal bifid. Teeth sub-equal, none grooved.

G. oxycephalum, Boie.
Alopecophis chalybæus, Gray.
Coluber prasinus, Blyth. J. A. S., B., XXIII, p. 291.

Præfrontals as broad as long, one-third the size of the postfrontals. Loreal very elongate. One large præocular in contact with the vertical. Two postoculars, the lower smallest. Scales in 25 rows, smooth with a pair of apical grooves. 11 upper labials, the fifth and sixth, or sixth and seventh entering the orbit. Colour uniform grass green, pale below. A dark loreal streak.

Grows to 90 inches. (Tail 24.)

Inhabits Assam, Tenasserim, the Andamans, the Malayan Archipelago, &c.

G. gramineum, Günther.

Præfrontals broader than long, half as large as the postfrontals. Loreal square. Præocular does not touch the vertical. Two postoculars. Scales in 19 rows, smooth, with a pair of apical grooves. 9 upper labials, the fourth, fifth, and sixth entering the orbit. Colour green, paler below. Tail behind reddish olive.

Inhabits the Khasi hills.

G. frænatum. Gray.

Præfrontals narrow in front, nearly half as large as the postfrontals. Postfrontal in contact with the second and third labials. Loreal none. Scales in 19 rows, the dorsal series faintly keeled. 9 low upper labials, the fourth, fifth, and sixth entering the orbit. Colour grass green, paler below. A dark loreal streak.

Inhabits the Khasi and Garo Hills.

DENDROPHIS, *Boie.*

Form very slender. Snout obtuse in front. Eye large with round pupil. Two nasals. Scales smooth in 13—15 rows. The vertebral series enlarged, triangular or polygonal, the others narrow, imbricate. Ventrals keeled.

D. pictus, Günther.

Coluber decorus, Shaw.
Leptophis, maniar, Bell.
Ahætulla Bellii, Gray.
Dendrophis Boie; Cantor.

One præocular. Two or three postoculars. Loreal elongate. Anal bifid. Scales smooth in 15 rows, the vertebral row considerably enlarged. Colour above bronze brown with a black edged yellow band along either side. Lower parts white or yellowish.

Grows to 48 inches. (Tail 14.)

Inhabits Bengal, Central India, Sykkim, Assam, Pegu, the Andamans, the Malayan Peninsula, &c.

CHRYSOPELEA, *Boie.*

Characters of Dendrophis, but the vertebrals are less enlarged. The ventrals more sharply keeled, almost trifid—and a posterior tooth is enlarged and grooved.

C. ornata, Shaw.

C. paradisi, Boie.

C. Hasseltii, Bleeker.

Scales smooth in 17 rows, with a pair of apical grooves; broader on the back than on the sides. Colour black with bright gamboge spots. Head barred with yellow. Sometimes the back is tinged with red, or has a series of red rosettes down it.

Grows to 53 inches. (Tail 13.)

Inhabits Bengal, Assam, the Khasi Hills, Pegu, Tenasserim, &c.

The principal food of this snake are the *Geckotidæ*.

FAMILY DRYIOP HIDÆ.

Form excessively slender. Head narrow, elongate, pointed. Scales narrow, imbricate, in 15 to 17 rows.

TRAGOPS, *Wagler*.

Snout pointed. Pupil horizontal. Nostril in a single nasal shield. Scales smooth or faintly keeled.

T. Perroteti, D. et B.

Leptophis Kanariensis, Jerdon. J. A. S., B., 1855, p. 530.

Dryiophis tropidococcyx, Günther.

Rostral higher than broad, with the upper margin reverted. Præfrontals small, in contact with the first and second labials. One-third the size of the postfrontals which touch the second labial. Nasal narrow, pointed behind, pierced by the nostril posteriorly. Loreal none. One præocular in contact with the vertical. One postocular. Scales in 15 rows, keeled in the coccygeal region. 8 upper labials, the fourth and fifth entering the orbit. Colour uniform grass green, yellowish below. A yellow lateral streak.

Grows to 24 inches. (Tail 5·5.)

Inhabits North Kanara, the Nilghiri Hills, &c.

T. prasinus, Rein.

Dryinus nasutus, Bell.

Tragops nasutus, Wagler.

T. xanthozonius, Russell.

Rostral flat, subcrescentic sharply ridged above. Frontals longer than broad. Nasal simple, pierced by the nostril

posteriorly. One to three loreals. Præocular one, joins the vertical. Postoculars two. Scales smooth in 15 rows, the vertebral series enlarged. 9 upper labials, the fourth, fifth and sixth entering the orbit. Colour light green, sometimes yellowish, or more rarely brown. A white or yellow line runs along the edge of the belly—occasionally a pale grey, or greyish ochre. The interstitial skin chequered with oblique short black and white bars. Grows to 84 inches. An adult male 71·50 inches. (Tail 24·5.) Female 39·95 inches. (Tail 12·55.) This contained 10 eggs.

Inhabits the Eastern Himalayas, Sykkim, Kachar, the Naga, Jaintea, and Khasi Hills, Pegu and Tenasserim.

T. dispar, Günther.

Rostral rather flat, longer than broad, with its upper margin reflexed. Præfrontals much longer than broad, in contact with the second labial. Postfrontals longer than broad, do not touch any labials. Nasals very narrow, pierced posteriorly by the nostril. Loreal small. Præocular one, touching the vertical. Two postoculars. Scales smooth in 15 rows. 8 upper labials, the fourth and fifth entering the orbit. The fourth is transversely divided.

Colour bright green in males, bronze brown in females. A yellow line along the sides of the belly.

Inhabits the Anamallay Hills.

T. fronticinctus, Günther.

Viviparous. Rostral small, oblique, flat, semi-circular. Nasal very elongate, separates the rostral from the præfrontals (simulating an addition frontal). Frontal much longer than broad. Two loreals. One to three præoculars reaching the vertical. Scales of back keeled, in 15 rows. 7 or 8 upper labials. Of the anterior ones horizontally divided. The sixth under the orbit.

Colour bright green, yellowish below, and with a black line margined above with yellow along the sides of the belly (query *males?*). A female was bronze brown when alive, belly dark ruddy brown, with a black lateral line with a broader creamy

upper border. Measured 34 inches (Tail 12), and contained seven fœti, each six inches long. Taken in a mangrove swamp on the Arakan Coast.

Grows to 36 inches. (Tail 10·5) query in males ?

Inhabits mangrove swamps on the Arakan Coast and freely seeks refuge when attacked in the water.

T. Javanicus, Stein.

Allied to *T. prasinus.* Scales smooth in 15 rows.

Anal single. Upper labials 9. The fifth and sixth upper labials only entering the orbit. The fifth upper labial nearly as large as the sixth and broad, whereas in *prasinus* it is very narrow. The second, third and fourth upper labials much smaller than in *prasinus.* Loreals 3. Præocular very large, hollowed out, and in contact with the postfrontal, the vertical and the superciliary. Postoculars 2, small. Ventral not keeled.

Colour green, with 4 white longitudinal stripes on the belly.

Inhabits Java and Pegu. (*Vide* An. & Mag., N. H., 1868, Vol. I, p. 424.)

PASSERITA, Gray.

Body and tail very slender. Head depressed, elongate. Snout pointed and ending in a flexible appendage. Loreal region deeply concave. Eye moderate. Pupil horizontal. Nostril small, lateral, in the hinder part of a single shield. Scales smooth, elongate, in 15 rows. Vertebrals enlarged. Ventrals not keeled. Anal bifid.

P. mycterizans, L.

Dryinus nasutus, Merr.

Dryinus fuscus, D. et B.

Loreal none, replaced by the frontals, which are bent down to meet the labials. One præocular. Two postoculars. Two labials from the lower edge of orbit. Colour bright grass green, lighter on the belly. A yellow lateral line along the belly on each side. Occasionally a brown variety occurs. (D. fuscus.)

Grows to 72 inches. (Tail 25.) The Ceylon race seems to remain one-third smaller than this.

Inhabits Bengal, Central and Southern India, Ceylon, the Khasi Hills, Upper Barma and Pegu (Northern).

P. purpurascens, Günther.

Resembles *mycterizans*, but the nasal appendage is verrucose on its upper surface, and it has no lateral streak.

Colour brownish gray, marked with purple and dotted with brown above and below. The shields of the upper surface of the head are brown with yellowish edges. A brown band from the snout through the eye to the throat.

Grows to 48 inches. (Tail 18.)

Inhabits Ceylon (Günther), Maunbhum (Anderson).

Family Dipsadidæ.

Body elongate, compressed. Head short, sub-triangular, distinct from neck. Eye large. Pupil vertical. Scales smooth.

Dipsas.

Scales smooth, those of the vertebral row enlarged. Posterior maxillary tooth grooved.

D. multimaculata, Schl.

Body strongly compressed. Scales in 17 to 19 rows, with an apical groove. Anal entire. Loreal higher than long. One præocular. Two postoculars. 8 upper labials, the third, fourth and fifth entering the orbit. Colour pale reddish olive with a series of round brown spots, pale within and bordered without with white, and down each side of spine with a row of smaller and less distinct spots along the side. Head symmetrically marked.

Grows to 35 inches. (Tail 7·0.)

Inhabits Pegu, Tenasserim, the Malayan Peninsula, Siam, Pinang, Java, Celebes, and, according to Günther, China and Bengal. The last locality, however, I doubt, and it requries strong confirmation. This is a common species in Pegu, and the handsomest of the genus, I think.

D. Barnesii, Günther. P. Z. S., 1869, p. 506, pl. 40, f. 2.

Scales in 19 rows. Loreal as high as long. Præoculars three, the upper not reaching the vertical. Postoculars two. Upper labials eight, the third and fourth entering the orbit. Temporals numerous, scale-like. Anal entire. Colour dark grey, finely powdered with brown. Irregular brown band-like markings on the back, and irregular black spots along the lower part of the side. Belly finely mottled with brown. Head dark brown, with a dark streak from eye to gape.

Length 23 inches.

Inhabits Ceylon.

D. hexagonota, Blyth (Stol. J. A. S., 1870, p. 198, pl. XI, f. 4, and 1871, p. 421.

Body compressed. Scales in 17 to 21 rows, according to age, with an apical groove. Anal bifid. Head very large. Loreal squarish, narrow above and higher than long. One large præocular, not touching the vertical. Two postoculars, the lower a little smaller than the other. 8 upper labials, third, fourth and fifth entering the orbit. Eye very large and prominent. Colour coral red on back and sides. Head with a greenish smaragdine tinge. A black dot on the occipitals, and sometimes the vertical or a median streak on its anterior portion. Sometimes a short lateral streak on each occipital. Upper labials and below white. Body above marked by very numerous transverse slightly undulating blackish bands as broad as their interspaces and reaching to the ventrals. These bands disappear with age and the colour tones down to a reddish brown with a pinkish, yellowish or blackish interstitial skin.

Grows to 45 inches. (Tail 9·3.)

Inhabits Dorjiling Hills to 4,000, and the Andaman Islands, Bengal, &c.

Anderson (Proc. Zoo. Soc. for Feb. 1871) is inclined to refer to this species *multifasciata*, Blyth, but Stoliczka (J. A. S., 1871, p. 440) points out that the eye of *multifasciata* is much smaller and that it ranges rather with *D. Forsteni* of the Indian Fauna

proper than with the Malayan species *D. bubalina, boops,* or *hexagonota.*

D. ochracea, Theob. Jour. Lin. Soc., Vol. X.

Body slender, compressed. Scales on body in 17 rows (on neck 19, and towards tail 15 rows). Upper labials 9, the fourth, fifth and sixth entering the orbit. The pupil over the suture of fifth and sixth. The fifth small, the sixth, seventh and eighth very large. Colour uniform dusky grey or ochraceous, beneath whitish.

Grows to 35 inches. (Tail 7·5.)

Inhabits Pegu and Martaban.

Two specimens very similar in size and appearance were procured by me in Rangun and Moulmein.

D. trigonata, Boie.

Scales in 21 (rarely in 19) rows. Nostril small, rounded. Loreal squarish. One præocular. Two postoculars. 8 upper labials, the fourth and fifth entering the orbit. Colour yellowish olive, with an irregular yellowish black edged zig-zag band along the back. Crown of the head with two dark bands edged with black, convergent behind. An indistinct band from the eye to the gape. Belly white, with an irregular row of brown dots on the end of the scuta.

Grows to 36 inches. (Tail 9.)

Inhabits Southern India, Bengal, the Western Himalayas.

Günther considers that *Ceylonensis* is the island representative of this species, but this is hardly so, as *Ceylonensis* ranges also to the Himalayas.

D. Ceylonensis, Günther.

D. multifasciata, Blyth.

Scales in 19 to 21 rows, some displaying a "very minute subapical groove" (Stol.) Anal entire. Head shields as in *trigonata,* but the head slightly more elongate. Colour above light brown, with a dorsal series of irregular black spots on the neck, double and obliquely dispersed on the body. The sides marked,

with short black bands alternating with the spots, and a supra-abdominal row of black dots corresponding with the dorsal spots. Head above marked with black, with two ill-defined bars on the occipitals. A median dark line on the neck and one from the eye across the gape. Belly greenish white, minutely speckled with black and an irregular dark dot on the end of each ventral.

Grows to 39·5 inches. (Tail 7·5.)

Inhabits Ceylon and Western Himalayas, Subathu, Simla, &c.

D. bubalina, Klein.

Triglyphodon cyaneum, D. et B.

D. nigromarginata, Blyth. J. A. S., XXIII, p. 294.

Scales in 21 rows, with a single apical groove. Anal entire. Loreal rather higher than long. One præocular. Two postoculars. 8 upper labials, the third, fourth, and fifth entering the orbit. Colour above bluish green, below yellowish white, greenish posteriorly. A faint whitish line runs a little above the end of the ventrals, becoming obsolete on the tail. Interstitial skin of head and neck black, of the body only faintly.

Grows to 53 inches. (Tail 14.)

Inhabits Assam, Kachar, Dorjiling.

D. gokool.

Scales in 21 rows. Nostril moderate, round. One præocular (sometimes divided). Two postoculars. 8 upper labials, the third, fourth, and fifth of which enter the orbit. Colour yellowish brown. A black-edged arrow-shaped mark on the head longitudinally divided by a yellow line. A roundish black spot on the nape. A black streak from eye to gape. A straight yellow vertebral line, and down either side of body a row of some 50 black erect Y-shaped marks. Belly yellowish with an irregular series of brown spots along each side.

Grows to 33 inches. (Tail 7.)

Inhabits Bengal, Assam (Anderson), Pinang. A rare species.

D. boops.

Body very slender and compressed. Nostril round, wide. Scales in 21 rows. Loreal rather higher than long. One præocular

nearly reaching to the vertical. Two postoculars. 8 low upper labials, the third, fourth, and fifth entering the orbit, and very low. Colour reddish olive, dotted and spotted with brown and black, in longitudinal and transverse rows. A row of white spots along either side of belly, a black spot below each white one. Head symmetrically ornamented with white-edged black spots. Belly marbled with purple and brown dotted.

Grows to 57 inches. (Tail 15.)

Inhabits Bengal? (Hardwicke's collection), and Borneo (Labuan).

A rare species, very doubtfully Indian.

D. Forsteni, D. et B.

Scales in 25 to 27 rows, with a broad apical groove. Anal entire. Nostril rounded just below the præfrontal, the hinder margin of the posterior nasal swollen, forming a ridge. Loreal squarish. One præocular. Two postoculars. 9 upper labials, the third, fourth and fifth entering the orbit. The third sometimes divided. Colour brownish olive. Many scales, black, at the base, forming descending transverse bands, rather broken below into spots. A median black line along the occiput and nape. A short black band on the side of neck and another from eye to the gape.

Grows to 61 inches. (Tail 13.)

Inhabits Ceylon, the Anamallay Hills, Bandelkand, Maunbhum, and Dumerkunda at Pankabari in Sykkim, in Bengal.

Anderson says that Ceylon specimens are brighter coloured, and the labials have black margins. The ventrals too are laterally spotted and on the posterior part of body finely punctulated with black. The sub-caudals finely margined with brown. (Proc. Zool. Soc., Lon., Feb. 1871.)

Family Lycodontidæ.

Body moderate. Head somewhat elongate and depressed. Eye small with vertical pupil. Maxillary with a fang in front, but no posterior grooved tooth.

LYCODON, *Boie.*

Head depressed, with flat obtuse snout, distinct from neck. Scales smooth. Nostril between two shields. Anterior mandibular teeth lengthened.

L. aulicus, L.

Tytleria hypsirhinoides, Theo.

L. capucinus, Fitz.

Scales smooth, with a minute apical groove in 17 rows (finely striated under a lens). Præfrontals very small. Loreal large, its anterior angle being inserted between the præ and postfrontals. Nostril small. Præocular in contact with the vertical and third labial. Two or three postoculars. 9 upper labials, the third, fourth, and fifth entering the orbit. Colour reddish brown or brownish grey, barred and reticulated with yellow or white (in spirits). In the young the first bar forms a conspicuous collar, which disappears with age. Sometimes one uniform colour without markings, especially in aged individuals.

Grows to 24 inches. (Tail 4.)

Inhabits Northern, Central and Southern India, Ceylon, Bengal, Kachar, Arakan, Yunan, Barmah, the Andaman and Nikobar Islands, Pinang, the Philippines and Timor.

L. striatus, Shaw.

Scales smooth, with a minute apical groove in 17 rows. Anal bifid. Loreal twice as long as high. Præocular narrow, in contact with third labial. but not with the vertical. Two postoculars. 8 upper labial, the third, fourth and fifth entering the orbit. Nostril small, between two nasals. Brown or black barred with yellow, the bars being divided or broken up on the sides, and a bright yellow collar on neck (fading in spirits to white).

Grows to about 20 inches. (Tail 3·7.)

Inhabits the Anamallay Hills, the North-Western Provinces, the Panjab, and the hills below Simla.

L. jara, Shaw.

Leptorhytaon Jara. (Gth. gen.).

Lycophidium bipunctatum, Peters.

Scales smooth, with a minute sub-apical dot in 17 rows. Nostril either in a single shield, which may be simple, divided above and grooved below, or between two shields. Præfrontals small. One præocular. Colour brown, each scale with two yellow dots (white in spirits), with or without a yellow collar.

Grows to 16·5 inches. (Tail 2·5.)

Inhabits Southern India, Ganjam, Bengal, Sykkim and Garo Hills, Pegu, &c. (where it is certainly rare), but recorded by Stoliczka.

L. Anamallensis, Günther.

Scales in 17 rows, a minute apical groove on some of them. Anal entire. Præfrontals square, half the size of postfrontals, which are rather longer than broad. Two loreals. One præocular, scarcely touching the vertical. Two postoculars. Colour greyish brown, with 25 small white (yellow ?) brown-edged cross-bars on the back side, indistinctly reticulated with whitish. Each labial with a brown, spot. Belly uniform white.

Grows to 20 inches. (Tail 3·5.)

Inhabits the Anamallay Hills.

TETRAGONOSOMA, *Günther.*

Body slender or moderate. Head depressed, distinct from neck. Nostril between two shields. Loreal none.

J. atropurpureum, Cantor.

Colour deep purple, marbled with white and black, beneath pearl coloured.

Inhabits Mergui.

Cantor's specimen is lost, and the species has not been re-discovered. The only other species (*effrene,* Cantor) from Pinang and Banka has not hitherto been recorded within Indian limits. (See Stoliczka, J. A. S., 1870, p. 203.)

CERCASPIS, *Wagler.*

Body strongly compressed. Head flat, not very distinct from neck. Scales strongly keeled, or smooth, with apical groove in 19 rows. Ventrals with a lateral keel. Subcaudals entire. Pupil erect.

C. carinata, Kuhl.

Præfrontals small. Loreal longer than high. One præocular just reaches the top of the head. Two postoculars. 8 upper labials, the third, fourth and fifth entering the orbit. Colour black, encircled with white rings, broad below, but only one or two scales wide above. The first ring forms a broad collar, and the rings are broader in the young. In adults the head and neck are wholly black.

Grows to 24 inches. (Tail 4 or 5.)

Inhabits Ceylon.

C. Travankoricus, Bed. Mad. Mon. J. Med. Sc., 1870.

"Rostral deeply grooved below, not much produced back between the anterior frontals; anterior frontals small. Not half the size of the posterior. Vertical shield-shaped, three-sided, pointed behind. Occipitals longer than the vertical, pointed behind. Loreal much longer than high. Præocular reaching the surface of the head and touching the postfrontal and vertical. 8 upper labials, third, fourth and fifth entering the orbit; two postoculars. Scales in 17 rows, quite smooth, with small apical groove. Ventrals angled at the side. 66 entire subcaudals, or a few of them double towards the apex of the tail. Total length 15 inches, of which the tail is 2¾. Colour black, with white transverse bars. Belly uniform whitish. Very like *Lycodon striatus*, but with entire subcaudals. Travankor hills, Attraymallay, 5,000 feet elevation ; under stones, rare : it has quite the colouration of *Lycodon striatus*. Two specimens were found, one of which had all the subcaudals single, and the other had the first 38 entire, and the 28 small ones towards the apex of the tail, double."

Ophites, *Wagler*.

Body and tail slender, compressed, strongly keeled below. Head depressed, distinct from neck. Nostril between two shields. Scales keeled in 17 rows. Subcaudals bifid. Pupil erect. One of the anterior maxillary teeth enlarged with a blank space behind it. An enlarged mandibular tooth in front.

O. sp.

An undescribed species is recorded by Anderson from Yunan and Momein, so the genus probably will be met with in Barmah. The two known species being recorded from Java, Pinang and Sumatra. (*Vide* Anderson, J. A. S., B., part II, 1873, p. 36.)

O. albofuscus, D. et B.

Scales in 17 rows, strongly keeled. Anal bifid. Præfrontals short, much broader than long. Nostril situated between two nasals, · the præfrontal and first labial. Loreal squarish. One præocular. Two postoculars. 8 upper labials, the third, fourth, and fifth entering the orbit. Colour light reddish with some 50 brown cross bands, which are twice or thrice as broad as the interspaces. A reddish white collar.

Grows to 24·7 inches. (Tail 8·5.)

Dumeril's type came from Sumatra, but Günther describes a second specimen said to have come from India (Malabar Coast).

Family Amblycephalidæ.

Body slender, compressed. Head short, thick, very distinct from the neck. Eye moderate, with vertical pupil. Nostril in a single plate. Scales smooth or faintly keeled in 13 or 15 rows. The vertebral row enlarged. Maxillary teeth few and small. Palatal and mandibulary teeth strong anteriorly.

Pareas, *Wagler*.

Scales smooth or faintly keeled in 15 rows. The vertebrals largest or keeled. Ventrals rounded. Subcaudals bifid.

P. monticola, Cantor. (not of Blyth.)

Scales smooth, in 15 rows. Vertebrals enlarged. Anal entire. Præfrontals twice as broad as long, half the size of postfrontals, which enter the orbit. Nasal simple. Loreal replaced by a large præorbital, with a second small one below wedged between the orbit and the third labial. Two very narrow postorbitals, the lower excluding the fifth labial from the orbit. 7 upper labials, the fourth entering the orbit. Colour brown. A black streak from the brow, forming a ring behind the occiput, and continued as a black band on either side of the neck. Along the anterior part of body a row of oblique black Y-shaped cross bands, obsolete after the middle of the body. Below yellowish, dotted with brown.

Grows to 24 inches. (Tail 5·5.)

Inhabits Assam.

A rare snake. The type is in the Oxford Museum.

P. lævis, Kuhl.

Scales smooth in 15 rows. The vertebrals slightly larger. Anal entire. Præfrontals twice as broad as long, half the size of the postfrontals which enter the orbit. Nostril wide, in the posterior part of a shield. Loreal replaced by the single præocular. 7 or 8 upper labials, the third and fourth entering the orbit. The last two very low. Colour brown, marbled with black in irregular cross bands. Belly brown, or white with irregular blackish lateral spots.

Grows to 16 inches. (Tail 3.)

Inhabits the Khasi Hills, Kochin China and Java.

P. margaritophorus, Jan.

P. Berdmorei, Blyth.

P. macularius, Blyth. (the young).

Aplopeltura boa Schl. apud Blyth. (the adult).

Scales smooth in 15 rows, or slightly keeled on the back. Head high, quadrate, blunt, pugnosed. Eye large. Superciliaries large, fully as large as a postfrontal. Rostral high, but not reaching the top of the head, deeply excavated below. Præ and

postfrontals sub-equal. Nostril pierced posteriorly in a large shield. 6 or 7 upper labials, the anterior ones very high and narrow. Eye bordered below by 5, 6, or 7 small shields, which exclude the labials. Loreal small. Three pairs of large transverse gulars, the first forming a suture with the four first labials. Anal entire. Colour uniform ochraceous, with obsolete traces of vertical bands down the body. Two converging dark lines on the nape and traces of a white collar in one specimen.

In the young (*P. macularius*) the head shields display some irregularity. Præfrontals very small. In some the postfrontals enter the orbit. Superciliaries large, enter a notch between the vertical and occipitals. Occipitals very large.

Colour rich reddish brown, with reticulate bars formed by some parti-coloured scales, white in front, deep claret red behind, giving the snake a half banded, half-spotted appearance. A conspicuous white collar on the nape mottled with claret red. Belly brown, spotted and mottled.

Grows to 24 inches. (Tail 4·5.)

Inhabits Tenasserim.

P. modeslus, Theob. (Journ. Lin. Soc., Vol. X).

Scales smooth in 15 rows. Vertebrals not enlarged, but the four vertebral rows faintly keeled. Præfrontals small. Postfrontals large, bent over and entering the orbit. Superciliaries small. Loreal moderate. Præoculars two, very small. Postocular one, very small, with a band-like subocular excluding the labials from the orbit. 7 upper labials, the fourth and fifth high, under the orbit, sixth low, seventh very long, with two elongate temporals over it. Three pairs of large transverse gulars. Colour above uniform brown. Below pale yellowish.

The type was from Rangun. (Pegu.)

STOLICZKIA, *Jerdon*.

Head blunt, very distinct from the thin neck. Body long, compressed. Scales in 31 rows. Anal and subcaudals entire.

S. Khasiensis, Jerdon. Proc. As. Soc., B., 1870, p. 81.

Shields of the head short, not covering the occiput. Præfrontals very small. Postfrontals very large. Vertical broader than long. One præocular. Two postoculars. No temporals, small scales immediately following the postocular. 8 upper labials, the fifth and sixth entering the orbit, the last very long. 3 pairs of small chin shields. Scales ovate, tuberculated or ridged, not imbricate, and increasing in size toward the ventrals. Ventrals 207.

Length 26·5. (Tail 7·75.)

Inhabits the Khasi Hills.

FAMILY PYTHONIDÆ.

Habit moderate, but size large. Tail prehensile. Head depressed, snout truncated or rounded in front. Eye moderate, pupil vertical. Scales smooth, some of the labials pitted. A spur-like prominence on either side of vent, indicating a rudimentary limb beneath the skin.

PYTHON, *Daudin.*

The anterior half only of the head covered with shields, the hinder with scales. Nostrils between two unequal shields.

P. reticulatus, Schn.

Scales in 74 rows in the middle of the body. Behind the postfrontals a pair of large shields, followed by four shields in line, the inner being smallest, followed by the vertical. Three loreals, two small, above a long one. Three præoculars, one large, above two small ones. A single labial below the orbit. The first five upper labials deeply pitted and the ninth to the thirteenth lower labials (Stol.) Colour during life clear grey, superbly reticulated with black with a rich glossy lustre. The grey colour of the back is seen as a series of oblique lozenges separated by black and yellow margined. Yellow is also interspersed on the interstitial black ground, between the lozenges and on the sides forms irregular ocelli. The minor

details of pattern irregular and variegated. Head yellow, with a median black streak and two black dots on the occiput.

Tail varies from an eighth to a tenth of the entire length.

Grows to about 30 feet, but specimens over 20 feet are seldom seen.

Inhabits the Malayan Peninsula, the Nikobars, Barmah and Tenasserim.

P. molurus, L.

Scales in 65 rows round the middle of the body. Several small shields between the postfrontals and the vertical. 11 upper labials, the sixth below the orbit, but separated from it by one or two infraoculars. The two anterior upper labials are pitted and four of the lower ones. Colour light greyish brown. A brown lanceolate or subcordate spot on the crown and nape, its point resting on the frontals, its end on or behind the vertical. A light median streak divides its broader portion. A dark brown streak from the nostril to gape, becoming broader behind and confluent with another running along the mandible. A subtriangular brown spot below the eye. A vertebral series of large quadrangular spots, with margins sometimes straight, sometimes serrated, and an oblong spot on each side of the quadrangular ones. Along the sides another row of irregular brown spots, sometimes with a light centre.

Grows to about the same size as the last.

Inhabits the whole of Peninsular India, Ceylon (?), Province Wellesley, the Malayan Peninsula (where less common than *reticulatus*) and Southern China.

FAMILY ERYCIDÆ.

Body cylindrical, covered by small short scales. Tail very short, with a row of undivided subcaudals. Eye small, with vertical pupil. None of the labials pitted. A short conical prominence in a groove on either side of vent, indicating the extremity of a rudimentary limb below the skin.

Gongylophis, *Wagler*.

Head flat, scarcely distinct from neck. Tail very short, tapering. Head covered with scales, only the fore part of the snout and lips shielded. Scales small, keeled. Ventrals and subcaudals narrow.

G. conicus, Schn.

Rostral shield nearly twice as broad as high, with two pairs of small shields behind, the outer of which are the anterior nasals. 12 upper labials, low, subequal. Orbit surrounded by scales. Scales in 41 to 47 rows in the centre of body, keeled. Colour brownish grey, with a dorsal series of large quadrangular brown blotches edged with dark brown and whitish, often confluent and forming a zig-zag band, with small irregular spots below. Beneath white. A brown temple streak behind the eye.

Grows to 25 inches.

Inhabits Peninsular India.

Eryx, *Daudin*.

Head covered with scales, not distinct from the neck, obtusely conical with a trenchant anterior edge to the snout. Body cylindrical. Skin thick and loose. Tail very short. Eye small, with vertical pupil. Scales small, slightly keeled. Chin with a median groove.

E. Johnii Russell.

E. maculatus, Hallowell.

Two pairs of small frontals. 10 to 13 upper labials, none of which enter the orbit, which is surrounded by scales. Scales on body in from 54 to 65 rows. Colour above reddish brown, with or without some irregular black spots and dots. Belly pale, dark marbled. Young specimens with three or four brownish rings round hind part of body.

Grows to 48 inches. (Tail 4.)

Inhabits Peninsular India.

This snake is commonly kept by snake-charmers, and is the "double-headed snake" of Europeans.

Cursoria, *Gray.*

Differs from Gongylophis in having smooth scales and apparently a mental groove.

C. elegans, Gray.

Head not distinct from neck. Snout truncated. Eye very small. Nostril very narrow. Head covered with small scales, those on the snout being largest. A pair of small frontal shields behind the rostral. 11 small upper labials, the sixth highest and below the orbit, which is encircled by a ring of small scales.

Scales in centre of body in 36 rows. Colour light brownish olive, with a dorsal series of irregular rounded chestnut spots black edged, with numerous small spots along the sides and belly.

Grows to 16 inches.

Inhabits Afghanistan.

Sub-order 2. Venomous Colubrine Snakes.

A poison gland present.

Family Elapidæ.

Tail conical, tapering. Head normally shielded, but the loreal invariably wanting. Nostril lateral. Eye moderate or small, with round pupil. Venom fang grooved in front and the canal contained, terminating in a slit.

Naja, *Laurenti.*

Neck dilatable into a hood. Scales smooth in 15 rows on the body, but more numerous on the neck. Nostril between two shields.

N. tripudians, Merr.
Coluber naja, L.
N. lutescens, Laur.
N. larvata, Cantor.
N. atra, Cantor.
N. kaouthia, Less.

Neck very dilatable under excitement, the anterior ribs being elongated and expansile. Anal entire. Subcaudals bifid. 6 upper

labials, the third and fourth entering the orbit. One præocular. Two to four postoculars. Colour very variable, from pale yellowish to pale and dark brown, and black. The spectacle marks also vary in development, and are sometimes replaced by a pale oval ocellus, with a dark centre. This variety, *zeta* of Günther's catalogue, prevails on the east of the Bay of Bengal, but I have seen the ordinary spectacled form, though rarely, in Pegu.

Grows to 70 inches.

Inhabits the whole of Continental India and Ceylon, the Lower Himalayas, Assam, Barmah, the Malayan Peninsula and the larger Asiatic Islands.

N. elaps, Schl.

N. vittata, Elliott.

Hamadryas ophiophagus and hannah, Cantor.

Gnahn, of the Barmese.

Subcaudals bifid, more generally the anterior ones single. Occipitals surrounded by three pairs of large shields. One or two præoculars. Three postoculars.

Colour during life of an adult female, olive brown with paler cross bands deeply edged with black. Beneath white mottled with black about tail. Throat yellow. This specimen had 9 caudal scuta and 83 scutella, and measured 147 inches. (Tail 26.)

A young female of 78 inches was uniform brown, passing into blackish on the hinder part of trunk and tail, with 40 pale buffish bands, black-edged, conspicuous on the tail, faint on the body and obsolete on the neck. Belly clouded with slaty. No yellow on throat. Both specimens from Pegu.

Günther describes the colours as greenish or brownish olive with numerous oblique alternate black and white bands converging towards the head. Belly dark mottled, or uniform black, with yellow throat and chin. Stoliczka thus describes the young. J. A. S., 1870, p. 211:—Colour "pure jet black; the snout, a band in front of the eyes, a third posterior to these broken up into large spots; a fourth across the posterior end of the occipitals broken up into six spots, 32 narrow equidistant

rings on the body, directed forward along the dorsal line, and 11 rings on the tail, as well as its extreme tip, are yellowish white." The rings are broader below than above, and the general colouration "most markedly recalls that of *Xenurelaps bungaroides*, of which we as yet only know young specimens."

Grows to 170 inches.

Inhabits India, Barmah and the Tenasserim Provinces.

This superb snake has the reputation in Pegu of attacking with persevering ferocity any one molesting it, but I imagine the statement holds good only during the breeding season. I have myself frequently noticed them in the jungle, and though tolerably fearless of man, those I have seen did not evince any desire to attack me. I have on two occasions taken the snake myself. Once when descending the Tenasserim river in company with Dr. Oldham, I noticed one of these snakes in the brushwood on the river bank, and mistaking it for the harmless *Ptyas*, I sprang ashore and seized it by the tail. I had no sooner done so than I discovered my error, but had the presence of mind to hold the creature gently, so as to induce it to suppose that with a slight effort it would disengage itself, and calling to my men for a 'Dah,' which was at once handed to me, I with two blows severed the animal in half, the head and fore part of the trunk at once rolling into the river. After some little time the head was fished out, and the creature found to measure 12 feet.

On another occasion I noticed a large crowd of Barmese round a bush in which was an infuriated *Gnahn* surrounded by men and dogs, which it kept at bay by spirited charges, when too close an approach was made to it. Seizing a stout stick, I directed all the men to retire to some distance, and took up my stand a few yards in the open on the other side. As I anticipated, as soon as the coast seemed clear, out came the *Gnahn* on my side, straight for where I was standing, though probably without perceiving me. In a second, I dealt him a smart blow on the head, and before he could recover himself, I flung myself on top of him and firmly secured him, though, as he measured 12 feet, it was as much as I could do to hold him with safety, I now dragged

him to my tents, which were close at hand, and divided his cervical vertebræ with a pair of nail scissors, to the profound astonishment of the Barmese present. It was a foolhardy thing to do, but one does not stop to weigh consequences when a fine specimen is to be secured.

The bite of a snake of this size would probably prove fatal to a man in three minutes, and cases are known of elephants having been killed in a few hours by the bite of a *Gnahn*.

The Barmese snake-charmers catch these snakes and exhibit them in the same way as '*Cobras*,' but always give them their liberty in a few months, to avoid the sin of their death, should they die of inanition whilst in their possession.

The *Gnahn* feeds on other snakes (it is said), whence one of its specific names, but is an inoffensive animal I believe, save when intruded on during the nuptial period, at other times displaying the calm sense of superior power rather than irritability or ferocity.

CALLOPHIS, *Gray*.

Body sub-cylindrical, long and slender. Head short, obtuse with broad snout, not distinct from neck. Tail short. Eye small with round pupil. Nostril between two nasals. One præocular. Two postoculars. Scales smooth in 13 rows, the vertebrals not enlarged. Subcaudals bifid.

C. intestinalis, Laur.
Elaps furcatus, Schn.
Maticora lineata, Gray.

Head brown, black spotted on the side and yellowish below. A red vertebral stripe bordered with black. A buff coloured band bordered with black along the edges of the two outer rows of scales. Belly with alternate pale citrine and black cross bands, the latter colour occupying three or four ventral shields, the former rarely more than two. Tail with three black rings, sometimes absent.

Grows to 24 inches. (Tail 1·5.)

Inhabits Upper Barmah, Sumatra, Borneo and the Philippines.

Mr. Bernard Meyer has pointed out a remarkable physiological peculiarity in this species and *C. bivirgatus.* The poison glands exceed one-third of the entire length of the animal. Stoliczka thus describes their course, J. A. S., 1870, part II, p. 212:— "They are somewhat more than one-third the length of the body, running along the ventral side and accompanying laterally the alimentary and respiratory canal. Their anterior half is extremely thin, after which they gradually thicken, terminating in front of the heart with club-shaped ends, being here partially surrounded by the parenchyma of the internal organs. There is a perceptible thickening of the muscles to be observed here, and when seen externally, the body is slightly thicker where the poison glands terminate."

This remarkable peculiarity has only hitherto been noticed in the above species, *intestinalis* and *bivirgatus.*

C. bivirgatus, Boie, has not been recorded from Indian limits. It is readily known by its immaculate vermilion head, belly, and tail.

C. annularis, Günther.

Head and neck black above, with a broad yellow (red ?) cross band behind the eyes. Body and tail reddish brown, with 40 narrow equidistant black white-edged rings, each a scale broad on the body, but broader on the tail. Belly yellowish, with a black bar between the rings, one scale broad, so that every third ventral is black.

Type marked from India measures 19 inches. (Tail 2.)

C. trimaculatus, Daud.

Coluber melanurus, Shaw.

Colour above light bay, an indistinct line formed by minute brown dots along each row of scales. Upper side of head and neck and a spot below the eye black. Snout with some irregular small narrow yellow spots. A yellow spot on each temporal. A sub-triangular yellow spot on the middle of the neck. Black of the neck edged with yellow behind. Tail marbled with black

below, with two black rings each variegated with yellow. Belly red.

Grows to 12 inches. (Tail 0·9.)

Inhabits Tenasserim and Bengal (?)

E. maculiceps, Günther.

E. melanurus, Cantor (not Shaw).

Colour uniform pale brown, with a chain of 36 distant, not very distinct black dots down either side of back. Crown of the head black, giving off a broad streak behind the eye, and uniting with a black collar on the nape. A subterminal black ring on the tail and a broader one at the base, expanded above into a rhomboidal escutcheon, with a narrow black median line above the tail.

Grows to 24 inches. A Rangun specimen measured 19·25 inches. (Tail 1·25.)

Inhabits Pegu, Tenasserim and the Malayan Peninsula.

C. nigrescens, Günther. Monog. I. R., p. 351.

C. concinnus, Beddome. Mad. Quar. J. Med. Scn., VI, 45, pl. 1, f. 2.

Upper parts blackish ash. Lower parts red. Crown of the head symmetrically marbled with black, a black spot below the eye, another descends from the occipital to the gape. A black horse-shoe collar, with its ends directed forwards. A narrow black vertebral line slightly edged with yellowish runs from the collar to the tip of the tail. A series of small ovate black spots indistinctly edged with whitish along each side of the trunk anteriorly. Anal entire or bifid.

Grows to 48 inches. (Tail 5.)

Inhabits the Nilghiri and Shevroy Hills, and the Wynaad.

C. cerasinus, Bed. Mad. Mon. J. Med. Sci., 1867, p. 15, pl. II, f. 5.

"Rostral slightly produced back between the anterior frontals. Anterior frontals only half the size of the posterior, the latter touch the orbit. No loreal and no anteocular. Nostril between 2 nasals. 7 upper labials, 3rd, 4th and 5th very high. 3rd and 4th enter the orbit. 1 small postocular. Vertical 6-sided,

pointed behind. Superciliaries small. Occipitals large, elongated, pointed behind, with a pair of large temporals on each side. Anal entire. Back purplish brown, with a shining nacreous lustre, with transverse broad irregular shaped black bands extending to the tip of the tail (about 40) at nearly equal distances, and which are continued (though not broad) underneath the belly and tail, but do not quite meet. Sides (2 or 2½ of the lowest rows of scales) and belly of a bright cherry colour. Head black in front, neck with the 5th, 6th, and 7th labials, and a portion of the occipitals cherry coloured. Length 21½ inches, of which the tail is 2 inches. Circumference 1⅛ of an inch. Subcaudals 31. Abdominals 228.

Inhabits Malabar forests, the Wynaad at 3,000 feet.

C. pentalineatus, Bed. Mad. Mon. J. Med. Sci.

"7 upper labials. 2 postoculars. 1 anteocular. Of a cherry colour, with 5 longitudinal black streaks from the neck to the end of the body, and 3 along the upper part of the tail; the middle streak is the broadest, the lowest streak is between the 1st and 2nd scales from the abdominals, the 2nd between the 3rd and 4th. The fifth row of scales is untouched by any of the black streaks, the broad central streak occupies the whole of the central row of scales along the top of the back and part of the row on each side of it; belly uniform cherry red. Neck black. Head with black markings."

Grows to 36 inches.

Inhabits the Travankor Hills.

C. MacClellandii Reinh. Calcutta Jour. Nat. Hist., 1844, IV., p. 532.

C. personatus, Blyth. J. A. S., 1855, XXIII, p. 298.

C. univirgatus, Günther. P. Z. S., 1859, p. 83, pl. 17.

Upper labials 7. Anal bifid. Ventrals 218. Subcaudals 28. Head and neck black, with a yellow bar behind the eyes. Body and tail reddish brown, with generally a black vertebral line from the nape to the tip of tail. Belly yellowish, with black cross bands or quadrangular spots. Sometimes the belly bars

are alternately short and long, giving the appearance of a chain of supra-abdominal spots. Tail black ringed, or sometimes without rings, and belly only spotted. Sometimes the vertebral line is absent and the body encircled with black rings.

Grows to about 30 inches,

Inhabits Nipal, Sykkim and Assam.

XENURELAPS, *Günther*.

Body sub-cylindrical, long and slender. Head short, sub-triangular with rounded snout, not distinct from the neck. Tail short. Eye small with round pupil. Nostril between two nasals. One præocular. Two postoculars. Scales smooth in 15 rows. Vertebrals enlarged. Subcaudals bifid. Anal entire.

X. bungaroides, Cantor.

7 upper labials, the third and fourth entering the orbit. Colour above black, with narrow white angular transverse lines directed forwards, and more distinct in front than behind; 48 on the body. Lower part of rostral white. A white line across the snout before the eyes. Two interrupted divergent white lines from the vertical descending to the neck, another band from behind to the fifth and sixth labial. Type: 15·8 inches. (Tail 1·8.)

Inhabits the Khasi Hills.

BUNGARUS, *Daudin*.

Body elongate. Tail rather short. Head depressed with rounded muzzle, hardly distinct from the neck. Nostril between two nasals. One præocular.' Two postoculars. Scales smooth, obliquely disposed in 13 to 15 rows, those of the vertebral row enlarged and hexagonal. Eye small with round pupil.

B. cæruleus, Schn.

Boa krait, Williams. As. Res.

Boa lineata, Shaw.

B. lividus and candidus, Cantor.

B. arcuatus, D. et B.

Scales in 15 rows. Colour above deep lustrous blue-black,

uniform or streaked, and reticulated with white much as some vars of *Lycodon aulicus* Below white.

Grows to 54 inches. Günther says the tail is a seventh, but it is usually less.

Inhabits the whole of Continental India from Cape Komorin to the Himalayas (but not Ceylon, according to Günther), Sykkim, Assam, Pegu, and Tenasserim, the Andamans (?)

This is the 'krait' of Hindustan, and the harmless little *L. anlicus*, or 'carpet snake,' so much dreaded. Probably owes its evil name to the resemblance of some of its varieties to the '*krait*.'

B. fasciatus, Schn.

B. annularis, Daud.

Scales in 15 rows. Body alternately ringed black and yellow, the bands not crossing the belly, the first being broadest and produced into a triangular process resting on the vertical. Head black. Throat and belly yellow.

Grows, it is said, to 90 inches. An adult male taken in Pegu measured 65 inches. (Tail 6.)

Inhabits Peninsular India (locally), the Northern Sirkars, Bengal, Kachar, Assam, Upper Barmah, Pegu, Tenasserim and the Malayan Peninsula.

B. Ceylonicus, Günther.

B. fasciatus, var B. Günther, Colubrine Snakes, p. 221.

Eighteen or twenty broad black rings encircle the body, the white (yellow ?) intervals being very narrow, so as to produce the appearance of white bars on a black ground. In the young the black bands do not cross the belly.

Inhabits Ceylon and Southern India, a specimen which I refer to the species having been received by me from near Palamkottah, through the kindness of Major Swiney.

B. flaviceps, Reinh.

Megærophis formosus, Gray.

Scales in 13 rows. Colour black. Head, neck, and a thin

vertebral line bright coral red. Belly red or black anteriorly, red posteriorly.

Grows to 73 inches. (Tail 9.)

Inhabits Tenasserim, Pinang, Java, Sumatra and Borneo.

Sub-order 3. Viperine Snakes.

Snakes furnished with long tubular erectile fangs on an extremely short maxillary bone.

Family Viperidæ.

Body stout. Tail short. Head broad. No pit in the loreal region. Eye with vertical pupil. Scales keeled. Physiognomy repulsive. Viviparous.

Daboia, *Gray*.

Head covered with scales. Nostril lateral, extremely large, between three shields. A narrow superciliary shield. Scales strongly keeled in 29 to 31 rows. Subcaudals bifid.

D. Russellii, Shaw.

Vipera elegans, Daud.

Colour above greyish or reddish brown, with three rows of black, white-edged annular ocelli down the back and sides. The vertebral series ovate, the outer ones circular. Sometimes supplementary ocelli of small size interspersed below between the others. A broad arrow mark on the head formed by two pale lines from the snout over the eyes to the temporal region. Rostral and labials yellowish with brown margins. A brown spot below the eye and head elegantly marbled. Belly yellowish or marbled with brown, and with numerous semi-circular spots on the hind margins of the ventrals.

Grows to 54 inches.

Inhabits Northern, Central, and Southern India, the Panjab, Kashmir, the Himalayas up to 5,000 feet, Bengal, Ceylon, Arakan, and Pegu, and perhaps Tenasserim, but I have no certain record of it below Rangun.

This snake, called '*Tic-pælonga*' in Ceylon, '*Chanda-bora*' or *Uloo-bora* in Bengal, '*Mhor bkwi*' in Barma, and *Cobra monil*

or '*Necklace snake*' by early writers, disputes with the cobra the evil pre-eminence of being the most deadly snake in the world. Its fangs, viewed only as mechanical weapons of offence, are very formidable, and as many as five supplemental ones may sometimes be counted behind the front one, all ready to supply its loss, and become anchylosed in its place if broken away. When, however, in addition to the wound these long tubular fangs are capable of giving, the injection of the deadliest venom is added, there is no snake perhaps in the world fitted to excite greater horror than this. Its physiognomy is peculiarly repulsive, and from its sluggish habits, and its disinclination to move out of the path on which it is coiled, on the approach of a man, and the vigour and effect with which it resents being trodden on, it is ever more dangerous than the gentler and more timid or retiring cobra. Whoever has seen one of these animals coiled up and slowly moving its coils one over another, but without attempting to escape, will at once see the beauty of the simile in the 22nd Book of Iliad, verse 93 (suggested no doubt from the behaviour of a European member of the same family), when Hector waiting the approach of Achilles is likened to a venomous snake roused and enraged by the approach of a man; and having once at Garden Reach nearly stepped on to a large *Daboia*, which though roused and angry made no attempt to move away, I have always very vividly realised the propriety of the above simile.

ECHIS, *Merrem.*

Head covered with keeled scales. A pair of very small frontals behind the rostral. Nostril small, round, situated in a large nasal shield divided below. Scales imbricate, strongly keeled in 25 to 29 rows. Subcaudals entire.

E. carinata, Schn.

Colour brown. An undulating pale line down each side, joined across the back by some pale dark-edged bars. Each convex loop of the side line filled with a dark spot, and some small dark spots along the abdomen. Crown of head dark, with a pale central lozenge and a dark stripe from the eye to the

gape. Two rows of scales next, the ventrals enlarged and deflected.

Grows to 24 inches.

Inhabits North-Western and Central India, the Panjab and Southern India, but is rare or absent in Lower Bengal.

A very active and irascible snake. The bite of a small one might not prove fatal, but that of a full grown one is no doubt extremely dangerous.

Family Crotalidæ.

Body stout, tail moderate or short. Head broad, subtrigonal. A deep pit in the loreal region. Eye moderate, with vertical pupil. Oviparous or viviparous, for both methods seem to obtain in this genus.

Trimeresurus, *Günther*.

Head triangular. Some small shields behind the rostral and small superciliaries present, the rest of the head scaly. Scales keeled in 17 to 27 rows. Tail prehensile. Subcaudals divided.

a. The second upper labial forms the front of the facial pit.

T. gramineus, Shaw. Zool. III, p. 420.
Vipera viridis, Daud.
T. elegans, Gray. An. & Mag., 1853, XII, p. 391. (young).

The supranasals are separated by a small shield or a pair of small shields. Scales in 19—21 rows, those of the head smooth or faintly keeled. Ventrals 158—170. Subcaudals 58—71. Colour grass green above, lighter on the sides. Tail sometimes cinnamon red. A yellow or brick-red line runs from behind the eye along the outer series of scales. Beneath pale greenish.

Grows to 32 inches.

Inhabits Sykkim, the Khasi Hills, Assam, Pegu, the Andamans (fide Blyth and Anderson), Bengal.

Günther also gives '*Ladak*,' which is clearly absurd, and Ningpo. It does not appear to occur west of Nipal.

T. Anamallensis, Günther.

Scales in 21 rows. Ventrals 148—158. Subcaudals 51—55. Colour yellowish green, with a dorsal series of large rhombic black spots, each spot variegated by yellow. Head marbled with black in adults, greenish in the young. A brown or black band from the eye to the gape. Superciliary with one or two black streaks. Belly yellowish green, with yellow and black spots along the sides. Tail black, with green and yellow spots. The young are reddish olive, with indistinct markings.

Grows to 24 inches. (Tail 3·5.)

Inhabits the Anamallay Hills.

T. monticola, Gray. An. & Mag., N. H., 1858, XII, 392.

Supranasals separated by a pair of small shields. Scales on the head smooth. On the body keeled in 21—23 rows. Ventrals 137—141. Subcaudals 41. Eye small. Colour in male blackish ash, in females and young pale brown. Two rows of square black spots along the back, alternately placed, or confluent. Sides black or brown spotted. A yellow or white streak from the eye to the neck, with a Y-like mark on the neck. Belly densely marbled with brown.

Grows to 21 inches. (Tail 2·50.)

Inhabits the Central and Eastern Himalayas from 2,000 to 8,000 feet, the Khasi Hills and Yunan.

T. erythrurus, Cantor. P. Z. S., 1859, p. 31.

T. albolabris, Gray. Zool. Mis., p. 48.

Trigonocephelus viridis, Schl. Phys. Scop. II, p. 544. Pl. 19, f. 12,13.

Supranasals in contact behind the rostral, with rarely a small shield between. Scales in 21—23 rows. The head "elongately oval, more depressed than in either *T. gramineus or T. carinatus*" (Stol.) Scales of the head slightly, of the body strongly, keeled. Ventrals 150—164. Subcaudals 54—70. Colour grass green above, lighter on the sides. Tail rusty. Lips and chin whitish, and a white lateral line bordered below with greenish or purple.

Belly greenish white. The white line and lips may be absent in old females.

Grows to 33 inches. (Tail 6·0.)

Inhabits Bengal, Assam, Kachar, Upper Barma, Pegu, Tenasserim, "Java, Siam, and China," fide Günther.

T. labialis, Fitz. Steindachner Reise der Nov. Rep., p. 86.
Bothrophis labialis, Fitz. Aush., p. 411.

Supranasals in contact, as in *T. erythrurus*. A narrow superciliary forms the hinder margin of the orbit. Superciliaries two. Scales in 23 rows, keeled. Anal large, entire. Ventrals 173, 168. Subcaudals 54—56, the last 6 or 7 entire.

Colour above brownish grey, brown spotted and barred. Belly yellowish or dark grey, spotted. Tail below margined with brown. Head above dark greyish brown. Upper labials yellow or pale grey. Sometimes a yellow line behind the eye, separating the dark colour of the back from the paler colour below.

Inhabits the Nikobar group.

T. carinatus, Gray. Zool. Mis., p. 48.
T. bicolor, Gray. An. & Mag., N. H., 1842, XII, p. 392.
T. porphyraceus, Blyth, apud Günther. J. R.
Cryptelytrops carinatus, Cope. Pro. A. Nat. Sci. Phil., 1859, p. 340.

Head short and high, with usually two rows of scales below the infraoculars. One or two shields usually between the supranasals, or, if absent, the supranasals only just touch but do not form a broad suture. Superciliaries very large. Scales strongly keeled in 23 or 25 rows, rarely in 21. Ventrals 155—169. Subcaudals 51—60. Colour above uniform grass green, paler below, or whitish. Tail yellowish or rusty.

Grows to 37 inches. (Tail 6·0.)

Inhabits the Western Himalayas (*vide* Stoliczka), Sykkim, the Garo Hills, Bengal, Pegu and Tenasserim. The Andaman Islands (?)

Stoliczka (in J. A. S., 1870, p. 218) remarks on the difficulty of separating specimens of this species where the scales are as few as 21 rows from *gramineus,* the stouter form of the head being the best criterion. In the Andaman Islands this species would seem to be replaced by the next.

T. porphyraceus, Blyth. J. A. S., 1860, p. 111.

T. carinatus, Gray, apud Günther. J. R., p. 386.

T. carinatus, Gray. b. and c. of my Cat. of Rept. A.S.B.

Scales in 25 rows. Supranasals small, separated by a largish shield. Colour dull "grass green, with a fine porphyraceous lustre throughout" (Stol.), or "grass green, brown or blackish either uniformly coloured, or variously mottled" Blyth). A few indistinct large porphyraceous spots posteriorly. Upper lip and below whitish. A lateral side streak rarely present.

Grows to 48 inches.

Inhabits the Andaman and Nikobar Islands.

This species was separated from *gramineus* (*viridis*) by Blyth on account of its peculiar colouration, and Stoliczka describes it as much narrower and more slender. It also has relations with *carinatus,* but the head is less high than in that species, it would appear also to be more restricted in its area than either of those species.

T. Cantori, Blyth. J. A. S., B., 1846, XV, p. 377.

Scales in 27—29 rows. Scales on the head very small. Ventrals 174—184. Caudals 55—76. Anal entire, semilunar. Colour dull green, with several rows of dark alternating spots. A white streak from the rostral to the gape, margined above and below with dark green, sometimes absent. A narrow white lateral line along the body and tail. Below whitish or greenish, with the base of the ventrals dark ashy. Tail strongly prehensile, light grey, dark spotted.

Grows to 48·50 inches. (Tail 6·75.)

Inhabits the Andaman and Nikobar Islands.

T. trigonocephalus, Merr. Tent., p. 156.
Nigromorginatus, Kuhl. Beit., p. 20.
Megæra olivacea, Gray. Zool. Mis., p. 49.

The anal is entire, but the ventral in front of it is notched or divided. Two pairs of shields on the snout, the inner twice the size of the outer. Scales in 17—19 rows, slightly keeled on the back, the others smooth. Ventrals 147—152. Caudals 57—63. Colour green, with network of black stripes on the head, one running from the eye to the gape. A black vertebral band emitting black streaks on either side alternately. The black is margined with yellow, and the streaks have usually a yellow centre. Sides slightly tinged with yellow. Ventrals pale green, with a broad posterior yellow margin. Caudals marbled with blackish, and tail tip black.

Grows to 31 inches. (Tail 5.)

Inhabits Ceylon.

b. Shield in front of the facial pit divided from the second upper labial.

T. mutabilis, Stol. J. A. S. B., 1870, p. 219.

Body slender. Scales in 21 rows. The second upper labial sometimes forms the anterior margin of the facial pit, or is sometimes divided into two, even on opposite sides of the same specimen. Anal entire. Ventrals 156—167. Subcaudals 48—62. Supranasals separated by a single shield. The first labial united to the nasal and marked with a groove only. One row of scales below the infraocular. Colour very variable. On the head blackish brown, on the body olive brown, barred with numerous greenish white dark-edged cross bands, either regular or broken and alternating. A white streak from the rostral to the gape, meeting a temporal streak, and thençe continued along the edge of the ventrals as a line of white and brown spots. Two other bands down each side separated by a brown band. Below yellowish or greyish, densely marbled with dark and red, especially in front. Tail coral red or reddish brown, darker below.

Grows to 19·50 inches. (Tail 2·75.)

Inhabits the Andaman and Nikobar Islands.

T. Andersoni, Theob. Catalogue of Rep., A. S. B., p. 75.

T. obscurus, Theob. ib., p. 76.

Accepting the correctness of Stoliczka's remarks (J. A. S. B., 1871, part II, p. 443) this species is equally variable with the last, as regards the subdivision of the second upper labial, which is undivided in *Andersoni* (type), but divided in *obscurus*. Supranasals separated by a shield behind the rostral. Scales in 25 rows, sharply keeled. Eye rather large, with two rows of scales below the orbit. Ventral 182. Subcaudals 71. Anal entire, strongly projecting. Colour above and below uniform rich brown. Belly and sides conspicuously white spotted, or greenish on the sides and belly, spotted and barred with brown.

Inhabits the Andaman Islands.

Stoliczka (l. c.) ridicules the identification of this species with *monticola* by Dr. Anderson (P. Z. S., 1871, p. 194), but points out its close relationship to *porphyraceus*. More materials are however required to settle the question of identity, though it seems certain it has nothing to do with *monticola*.

T. strigatus, Gray. Zool. Mis., p. 48.

Trig. Nilghiriensis, Jerd. J. A. S. B., 1854, p. 524.

Superciliaries narrow. No shields behind the rostral, but the surface of the head covered with small nearly smooth scales. Scales in 21 rows. Ventrals 136—142. Caudals 31—40. Colour brown, with a row of large irregular darker spots and a horse-shoe-like white mark on the neck. Lips yellowish. A triangular black spot below the eye and pit. A brown band from the eye to the neck. Mandible black spotted. Belly marbled with black. Tail tip white in the young.

Grows to 20 inches. (Tail 2·50.)

Inhabits the Dekkan and Nilghiri Hills.

c. *Species inadequately known.*

T. mucrosquamatus, Cantor. P. Z. S., 1839, p. 32.

Ventrals 218. Subcaudals 91. Brownish grey above, with black white-edged rings, covered with oval half-keeled pointed imbricate scales; whitish beneath, dotted with black.

Inhabits the Naga Hills, Assam.

PELTOPELOR, *Günther.*

Head covered with large shield-like imbricate scales. Scales keeled in twelve rows. Caudals divided.

P. macrolepis, Bed. Mad. Mon. J. Med. Sci., Vol. V.

Rostral shield small, triangular, erect; nasal pierced by a small round nostril. A narrow præocular above, and another below, the facial pit. Colour uniform green, dark olive in adults, bright grass green in the young. A yellow lateral line. Belly pale green.

Grows to 21 inches.

Inhabits the Anamally Hills.

HALYS, *Gray.*

Head broad, obtuse, covered with the normal number of shields above. Scales keeled in 23 to 27 rows. Caudals divided.

H. Himalayanus, Günther. I. R., p. 393.

The anterior frontals short; both together form a sort of crescent. Five upper labials; the second is small, not entering the margin of the facial pit. The third enters the orbit. Scales in 23 rows. Anal entire. Colour dark brown, indistinctly spotted with darker spots transverse, edged with black. Belly black, marbled with yellowish. A blackish band from the eye to the gape.

Grows to 25 inches. (Tail 3·75.)

Inhabits Garhwal.

H. Elliotti, Jerd. J. A. S. B., 1854, p. 523.

Trigonocephalus Elliotti, J. l. c.

"Form massive. 23 rows of scales on the body. Scuta 151. Scutella 43. Olive green above, pearl white beneath. Poison fangs small. Head covered with plates. Up to two feet and upwards long. I have only procured this on the Nilghiries, towards the lower portion of the plateau. Dr. Cantor tells me that 'the shields of the crown of the head resemble that of Trig. Blanchoffi, Schl.'"

Hypnale, *Fitzinger.*

Head broad, triangular. Snout covered with numerous unequal scale-like shields, symmetrically arranged. The crown of the head normally shielded. Scales keeled in 17 to 19 rows. Subcaudals bifid. Tail terminating in a short conical scale. Viviparous or oviparous.

H. nepa, Laur. Laur. Syn., p. 97.

H. affinis, Anderson. J. A. S. B., 1871, part II, p. 20.

Snout slightly upturned, scaled. Superciliaries very large, equal to or larger than occipitals. Loreal pit over the second upper labial. Upper labials 7, none entering the orbit. Three præoculars, the lowest in contact with a band-like postocular. Colour above brown, with a double dorsal row of dark spots, or dark cross bars. Below pale, profusely dark mottled, or brown darker mottled. A pale band from the eye over the temporal region continued down the side where it is broken up and lost. Chin and throat blackish or brown, variegated more or less with grey, with one or two opaque white dots on either side along the mandible. All the scales finely punctate with dark brown.

Grows to 19 inches. (Tail 2·50.)

Inhabits Ceylon and the mountains of Southern India.

The bite is said to be fatal, though exceptionally so to man, and then only after some days.

A variety with 19 rows of scales and 8 upper labials has been separated specifically by Anderson, but injudiciously I think.

NON-INDIAN SPECIES INCLUDED IN GÜNTHER'S MONOGRAPH.

Cuora flavomarginata, Gray ... China, Formosa.
„ trifaseiata, Gray ... China.
Notochelys platynota, Gray ... Singapore.
Emys Bealii, Gray ... Southern China.
„ mutica, Cantor ... Chusan.
„ nigricans, Gray ... Southern China.
„ Sinensis, Gray ... Canton, Formosa.
„ Reevesii, Gray ... Southern China.
„ macrocephala ... Siam.
Batagur affinis, Cantor ... Malayan Peninsula.
Trionyx Sinensis, Wieg. ... Chusan, Formosa.
„ ornatus, Gray ... Siam.
„ sub-planus, Schweig ... Singapore.
Crocodilus Siamensis, Schneid ... Siam.
Tachydromus meridionalis, Günther ... Southern China.
„ Septentrionalis, Günther ... Northern China.
Tropidophorus microlepis, Günther ... Chartaboum.
„ Cochin chinensis, Cuv. ... Cochin China.
Euprepes Chinensis, Gray ... China.
Mabouia quadrilineata, Blyth ... Hongkong.
„ Chinensis, Gray ... China.
Eumeces modestus, Günther ... Ningpo.
„ Reevesii, Gray ... China.
„ chalcides, L. ... Pinang, Hongkong.
„ Siamensis, Günther ... Siam.
„ Bowringii, Günther ... Hongkong.
„ isodactylus, Günther ... Camboja. [Island.
Gecko Smithii, Gray ... Prince of Wales'
„ monarchus, D. et B. ... Malayan Peninsula.

Gecko Japonicus, D. et B.	.. Chusan.
„ Swinhonis Günther,	.. Northern China.
„ sub-palmatus, Günther	.. Chikiang.
Gymnodactylus pulchellus, Gray	... Pinang, Singapore.
Pentadactylus Borneensis, Günther	... Borneo.
„ felinus, Günther	... Singapore.
Draco volans, L.	... Singapore, &c.
„ reticulatus, Günther	... Philippines.
„ Timorensis, Kuhl.	... Timor.
„ cornutus, Günther	... Borneo.
„ fimbriatus, Kuhl.	... Java.
„ spilopterus, Weigm.	... Manilla.
„ quinquefasciatus, Gray	... Pinang.
„ hæmatopogon, Boie	... Java.
„ trimaculatus, Günther	... Philippines.
„ lineatus, Daud	... Amboyna, Celebes.
„ rostratus, Günther	... Borneo.
Japalura Swinhonis, Günther	... Formosa.
„ polygonata, Hallowell	... Loochoo.
Bronchocela smaragdina, Günther	... Gamboja.
Acanthos aura capra. Günther	... Chartaboum.
„ coronata, Günther	... Chartaboum.
Physignathus Cochin chinensis, Günther	... Cochin China.
„ mentager, Günther	... Chartaboum.
Typhlina lineata, Boie	... Pinang, Hongkong.
Typhlops nigro albus, D. et B.	... Pinang, Singapore.
„ Siamensis, Günther	... Siam.
Calamaria quadrim aculata, D. et B	... Java.
„ albiventer, Gray	... Pinang.
„ nigroalba, Günther	... Pinang.
Oxycalamus longiceps, Cantor	... Pinang.
Simotes signatus, Günther	... Singapore.
„ cinereus, Günther	... Gamboja.
„ Swinhonis, Günther	... Amoy.
„ tæniatus, Günther	... Bankok.

Simotes Labuanensis, Günther	... Borneo.
„ fasciolatus, Günther	... Pachebone.
„ Cochin chinensis, Günther	... Lao mountains.
„ trinotatus, D. et B.	... Pinang, China.
Ablabes baliodirus, Boie	... Pinang.
„ melanocephalus, Gray	... Malacca, Singapore.
Cyclophis major, Günther	... China.
Coluber, rufodorsatus, Cantor	... China.
„ mandarinus, Cantor	... Chusan.
Elaphis dione, Pall.	... Northern China.
„ sauromates, Pall.	.. Ningpo.
„ tæniurus, Cope	... China, Siam.
Zaoccys fuscus, Günther	... Borneo.
„ carinatus, Günther	... Borneo.
„ dhumnades, Cantor	... Chusan, Ningpo.
Tropidonotus aunularis, Hallowell	... China.
„ trianguligerus, Rein.	... Pinang.
„ dorsalis, Günther	... Chikiang.
„ junceus, Cantor	... Pinang, Chikiang.
„ flavipunctatus, Hallowell	... Hongkong.
„ tigrinus, Boie.	... Northern China.
„ leucomelas, Günther	... Pinang.
Prymnomiodon chalceus, Cope	... Siam.
Cantoria elongata, Günther	... Singapore.
Hypsirhina Jagorii, Peters	... Siam.
„ Bennettii, Gray	... China.
„ Chinensis, Gray	... China.
Herpeton tentaculatum, Lacep	... Siam.
Phyllophis carinata, Günther	... China.
Dendrophis caudolineatus, Gray	... Pinang, Singapore.
Chrysopelea rubescens, Gray	... Borneo.
Dipsas cynodon, Cuv.	... Malayan Peninsula.
Lycodon Laoensis, Günther	... Cochin China.
„ rufozonatus, Cantor	... Chusan.
Ophites sub-cinctus, Boie	... Pinang.

Amblycephalus boa, Kuhl	... Pinang.
Acrochordus Javanicus, Hornst	... Pinang, Singapore.
Bungarus semifasciatus, Kuhl	... China, Formosa.
Callophis bivirgatus, Boie	... Malayan Peninsula.
„ gracilis, Gray	... Pinang, Singapore.
Trimeresurus Wagleri, Schl.	... Malayan Peninsula.
Calloselasma rhodostoma, Rein	... Siam.
Halys Blomhoffii, Boie	... Japan, Formosa.
„ Pallasii, Günther	... Tartary.

INDEX

OF

GENERA AND SPECIES OF INDIAN REPTILES.

SYNOPSIS

OF

THE FAMILIES, GENERA, AND SPECIES

OF

INDIAN CHELONIA, SAURIA, AND OPHIDIA.

ORDER CHELONIA.

FAMILY TESTUDINIDÆ.

Toes clubbed for walking on land; in some species only, partly webbed. Sternum and thorax united into a bony case. Caudal plate usually single.

TESTUDO.

Caudal plate single. Claws 5·4.

No nuchal plate. Shell rounded ... T. elegans.
No nuchal plate. Shell in adults flat ... T. platynotus.
A long nuchal plate ... T. elongata.
Nuchal plate triangular ... T. Leithii.

HOMOPUS.

Caudal plate single. Claws 4·4.

Nuchal plate narrow ... H. Horsfieldii.

MANOURIA.

Caudal plates double. Pectoral plates separated in males. Zygomatic arch strong.

Colour wholly black ... M. emys.

GEOMYDA.

Caudal plates double. No zygomatic arch.

Plates handsomely black and yellow rayed.. G. grandis.
Each costal armed with a small spine ... G. spinosa.
Back flat. Black and yellow mottled ... G. Arakana.

Chaibassia.

Characters of Geomyda but a zygomatic arch.

Brown above, black below. Keels yellow... C. tricarinata.

Family CISTUDINIDÆ.

Sternum attached by a ligamentous suture, and sometimes transversely divided as well.

Cuora.

Sternum attached by a ligamentous suture, and divided into two parts.

Black, blotched below with primrose yellow. C. Amboinensis.

Cyclemys.

Sternum attached by a ligamentous suture, and *divided in adults* by the non-anchylosis of the pectoro-abdominal suture.

Young handsomely rayed. Adults uniform. C. dentata.

Pyxidea.

Sternum attached by a ligamentous suture, *but entire in adults.*

Colour yellowish, browner on the sides ... P. Mouhotii.

Family EMYDIDÆ.

Feet webbed. Sternum flat or nearly so in both sexes.

Sternum and thorax united into one case. Size small, habits aquatic. Food animal or mixed.

Bellia.

Shell three keeled in the young. Colour uniform. Zygomatic arch strong.

Colour uniform brown. Young 3 keeled ... B. crassicollis.

Damonia.

Shell nodose in the young. Black, yellow spotted.

Colour blackish, yellow spotted ... D. Hamiltonii.

Melanochelys.

Shell 3 keeled. Zygomatic arch slender.

Colour brown, keels paler ... M. trijuga.

Head "red spotted and streaked" ... M. Sebæ.

Head not spotted. Colour black. Keels yellow ... M. Edeniana.

Family BATAGURIDÆ.

Chelonians mostly of large size with strong shells. Herbivorous.

Pangshura.

Fourth vertebral narrow before, decantershaped.

Back strongly ridged ... P. tectum.
Back flat ... P. tentoria.
Shell globose ... P. flaviventer.

Morenia.

Shell ocellated. Small.

Colour pale greyish brown ... M. Berdmorei.
Colour dark ... M. ocellata.

Batagur.

Shell plain or striped, large. Claws 5·4.

Colour, above uniform brown; beneath yellowish ... B. kachuga.
Colour green, with thin black bands. Nuchal none ... B. affinis.
Colour green, with three black bands. A small nuchal ... B. trivittata.
Colour gray, with three black bands ... B. dhongoka.
Colour deep blackish brown ... B. Thurgi.
Colour gray brown above, yellow beneath. Vertebrals keeled ... B. dentata.
Colour, above brown, beneath yellow. Nuchal triangular ... B. fusca.

Tetraonyx.

Shell as in Batagur, but claws 4·4.

Uniform brown ... T. baska.

Family PLATYSTERNIDÆ.

Platysternon.

Head covered by a horny case.

Head large, covered by a horny case ... P. Peguense.

Family CHITRIDÆ.

Claws three on all feet. Mandible weak.
Active. Carnivorous, ferocious.

Chitra.

Head elongate.

Head elongate C. Indica.

Pelochellys.

Head broad.

Muzzle short P. Cantorii.

Family TRIONYCIDÆ.

Claws three on all feet. Mandible strong.
Active. Carnivorous, ferocious.

Trionyx.

No bony plates at the margin.

a.—No median ridge on mandible inside.

Head marked with black streaks ... T. Gangeticus.
Head with yellow bar across the snout and two temporal spots ... T. ocellatus.
Head with the temporal spots but no yellow band on the snout ... T. sewaare.

b.—A median ridge inside mandible.

Head yellow mottled ... T. stellatus.
Head dark marbled. Sternum very cartilaginous T. Phayrei.
Head dark marbled. Sternum normal T. Grayii.
Head black dotted T. Peguensis.
(Young) 4 ocelli, beneath "sooty" T. formosus.
(Young) a saddle mark on the back T. ephippium.

Emyda.

Margin of carapace throughout with bony plates.

Shell yellow spotted ... E. granôsa.
Shell striped ... E. vittata.
Shell plain. Odd sternal bone large ... E. scutata.

Family CHELONIDÆ.

Feet fin-shaped. Inhabit the sea only.

Caouna.

Five pairs of costal shields.

Colour mottled reddish brown ... C. olivacea.

Chelonia.

Four pairs of costal shields.

Colour mottled reddish brown ... C. virgata.

Caretta.

Head elongate. Plates imbricate.

Nose beaked, hawk-like ... C. squamata.

Dermatochelys.

Shell coriaceous.

Shell-ribbed. No plates ... D. coriacea.

Order SAURIA.

A.—Aquatic Saurians. Vent longitudinal.

Family CROCODILIDÆ.

Back protected by osseous scutes.

Crocodilus.

The fourth tooth of the mandible fitting into a notch in the upper jaw.

Nuchal shields none. Dorsal shields broad.. C. Pondicherianus.

Nuchal shields none. Dorsal shield normal. C. porosus.

Nuchal shields four ... C. palustris.

Garialis.

Snout elongate: Nose humped in males.

Muzzle elongate, slender ... G. Gangeticus.

B.—Land Saurians. Vent transverse.

Family VARANIDÆ.

Lizards of large size, with compressed teeth. Tongue elongate, slender, forked. Scales non-imbricate, rounded, sub-equal. Limbs and claws strong. Habits diurnal. Food animal and carrion.

Varanus.

Nostrils between the eye and snout. Tail keeled.

Nostril nearer the nose than the eye ... V. flavescens.
Nostril between nose and eye. Body black dotted ... V. dracæna.
Nostril between nose and eye. Body yellow dotted ... V. lunatus.
An enlarged row of supercilliary scales ... V. nebulosus.

Hydrosaurus.

Nostrils near the end of the snout. Tail keeled.

Dark brown or black transversely white spotted ... H. salvator.

Psammosaurus.

Nostril nearer eye than snout.

Tail rounded ... P. scincus.

Family LACERTIDÆ.

Head covered with symmetrical shields. Tongue slender, forked. Scales of back granular or rhombic. No side fold. Limbs well developed. Habits active, diurnal. Food insects.

a.—Eyelids distinct.

Tachydromus.

Dorsal scales large, inguinal pores only.

Dorsal scales in four longitudinal rows T. sexlineatus.
Dorsal scales in six longitudinal rows ... T. Haughtonianus.

Cabrita.

Scales in six rows. Femoral pores.

Two small postnasals ... C. Leschenaultii.
One small postnasal ... C. brunnea.
Three nasals ... C. Jerdoni.

Acanthodactylus.

Ventral scales in twelve rows. Femoral pores.

Colour ruddy ash with 6 white lines down the back ... A. Cantoris.

MESALINA.

Nostril between an upper and lower nasal with a minute postnasal. Præanal single. Femoral pores.

Ventral shields in twelve rows ... M. breivrostris.
Ventral shields in eight rows ... M. Watsonana.

b.—Eyelids none.

OPHIOPS.

Nostril in the muzzle ridge between two or three small shields. Gular fold none. Femoral pores.

Scales on back in 25—28 transverse rows.
One præfrontal ... O. Jerdoni.
Scales on back in 25—26 rows. Two or three præfrontals ... O. monticola.
Scales of back in 50 transverse rows ... O. microlepis.
Scales of back in 45 transverse rows ... O. meizolepis.

FAMILY ZONURIDÆ.

A distinct longitudinal fold.

PSEUDOPUS.

Body anguiform. Limbs none or rudimentary.

Body spotted with turquoise blue ... P. gracilis.

FAMILY SCINCIDÆ.

Scales imbricate. No gular or lateral fold. No femoral or præanal pores. Tongue free, exsertile, bifid at tip. Habits active, diurnal.

A.—Scales keeled.

TROPIDOPHORUS.

Tail spinosely keeled. Olive brown, with oblique red bars across the back ... T. Berdmorei.

EUPREPES.

Tail without spines.

Section a.—Lower eyelid scaly.

Scales 3—5 keeled ... E. carinatus.
Scales 5—7 keeled (viviparous) ... E. macularius.

Scales 3 keeled. Three white bands ... E. trivittatus.
Scales 3 keeled. Seven narrow white stripes ... E. septemlineatus.
Scales 3 keeled. Brownish, irregularly black streaked ... E. olivaceus.
Scales 9 keeled ... E. novemcarinatus.
Scales strongly 5 keeled. Two indistinct bands along the back ... E. rugifera.

Section b.—Lower eyelid with a transparent disk.

Scales with two prominent keels. Sides white spotted ... E. monticola.
Scales 6—7 keeled. Three white stripes ... E. trilineatus.
Scales (?) keeled. Five pale longitudinal bands ... E. Beddomei.
Scales 5 (3—4) keeled. Two white lines on each side ... E. innotatus.
Scales 4—6 keeled. Colour above uniform brown ... E. longicaudatus.
Scales 2 keeled on the back, with a central yellow band ... E. Petersii.

RISTELLA.

Body long. Limbs feeble. Toes five.

Claws retractile between the terminal shields ... R. Travankorica.
4 central rows of scales, with a central spot.. R. Rurkii.

B.—Scales smooth.

HINULIA.

Lower eyelid scaly.

Scales in 46 transverse rows ... H. Indica.
Scales in 96 transverse rows ... H. maculata.
Scales in 76 transverse rows ... H. Dussumierii.
Four superciliaries. Ears with two lobules in front ... H. Taprobanensis.

MOCOA.

Lower eyelid with a transparent disk. Supranasal none.

Sides dark, white spotted. 2 large præanals. M. Sikkimmensis.
A dark lateral band. 2 large præanals ... M. Himalayana.
Colour uniform brown. 4 large præanals ... M. Schlegelii.
Colour bright bronze. 2 large præanals ... M. sacra.
No enlarged præanals ... M. formosa.
A dark lateral band enclosing a white line. 2 large præanals ... M. bilineata.
A black vertebral line. 2 large præanals ... M. Travankorica.
Above dark green, with reticulated black lines. 2 very large præanals ... M. Stoliczkæ.
Colour brown, with 3 blackish bands and black and white spots. 2 large præanals... M. Blythii.
Back blue spotted, between two black rows. M. Kargilensis.
Ear denticulate. 2 large præanals, greenish with rows of black dots ... M. Ladakensis.
Ear opening very wide, circular. 2 large præanals ... M. macrotis.

MABOUYA.

Lower eyelid with a transparent disk. 2 supranasals.

Colour uniform brown ... M. Jerdoniana.

BLEPHAROSTERES.

Eyelid none. Nasal single.

Ears minute or none ... B. Grayanus.
Ear opening distinct, separated from the last labial by two enlarged scales ... B. agilis.

RIOPA.

Body long. Limbs feeble. Toes five.

Section a.—Lower eyelid scaly.

Sides white spotted. Tail shorter than body ... R. albopunctata.
Tail longer than body ... R. lineolata.
Scales between axils in 48—56 rows ... R. Hardwickii.
Scales between axils in 78—84 ... R. punctata.

A large central occipital shield ... R. anguina.
Central occipital shield small ... R. cyanella.

EUMECES.

Dorsal scales enlarged.

Scales in 21 longitudinal rows ... E. tæniolatus.
Scales in 30 longitudinal rows ... E. Blythianus.

CHIAMELA.

Limbs feeble. Toes four

Scales smooth. Lower eyelid transparent.
Colour golden brown. Toes 4·4 ... C. lineata.

HAGRIA.

Limbs feeble. Toes five before, four behind.

Scales smooth. Lower eyelid transparent
Colour brown and yellow lined. H. Vosmaerii.

FAMILY ACONTIIDÆ.

Nostrils in the rostral plate. Limbs rudimentary or absent.

ACONTIAS.

Legs entirely absent.

Colour brown ... A. Layardi.

NESSIA.

Four rudimentary legs.

Three toes only ... N. Burtonii.
No hind toes ... N. monodactyla.
Four toes on all feet ... N. Thwaitesii.

DIBAMUS.

Limbs in male 2. Females limbless.

Scales in 24 longitudinal rows ... D. Nikobaricus.

FAMILY SEPSIDÆ.

Nostrils in a small nasal shield wedged into the rostral.

SPHENOCOPHALUS.

Limbs rudimentary, anterior smallest and fitting into a groove.

Toes three ... S. tridactylus.
Toes five ... S. pentedactylus.

Family GECKOTIDÆ.

Head triangular. Back granular. Scales of belly rhombic. Tongue thick and short. Toes generally furnished with transverse pneumatic plates. Tail fragile, reproduced after fracture. Habits nocturnal. Food insects. Femoral or præanal pores usually present in the males.

A.—Eyelids none.

a.—Phalanges with undivided pneumatic plates below.

Gecko.

Four claws on each foot. No lateral cutaneous expansion on sides or tail.

No enlarged subcaudals ... G. guttatus.
Subcaudals enlarged ... G. stentor.
Subcaudals band-like, irregular ... G. monarchus.

Ptychozoon.

Four claws on each foot. Sides and tail with cutaneous expansions.

Skin of sides and tail expanded ... P. homalocephalum.

Phelsuma.

Claws none. Pupil circular.

Claws none ... P. Andamanense.

b.—Phalanges with divided pneumatic plates below.

Calodactylus.

Toes dilated throughout, with two sets, terminal and basal, of pneumatic plates on the four outer toes.
Golden yellow speckled with brown ... C. aureus.

Hemidactylus.

Five claws on each foot, no lateral cutaneous expansions.

Large triangular tubercles scattered over the back ... H. triedrus.
Tubercles smaller than the last ... H. sub-triedrus.

Scattered tubercles of moderate size. Grows to 5·5 inches ... H. maculatus.
Similar to maculatus but grows to 9·5 inches H. Piersii.
Back granular, with rows of sub-trihedral, elongate, equal tubercles ... H. gracilis.
A few tubercles only in the sacral region ... H. Cocteaui.
Back with flat scattered tubercles ... H. Leschenaultii.
Allied to '*Cocteaui*' but twice the size ... H. giganteus.
Back granular, with two lines of distant tubercles down the sides. Thumb small.. H. fænatus.
Thumb well developed ... H. Mortoni.

NYCTERIDIUM.

Five claws on each foot. Sides with a cutaneous expanded fold
Back granular. Tail with serrated edges ... N. Schniederi.
Back granular. A median row of subcaudal plates ... N. Gaudama.
Back with numerous longitudinal rows of tubercles ... N. Karenorum.

PERIPIA.

Four claws before, five behind. No lateral cutaneous expansion.
Three pairs of elongate chin shields ... P. Peronii.
No chin shields ... P. Cantoris.

Undivided pneumatic plates at the base of the toes.

GYMNODACTYLUS.

Toes with undivided pneumatic plates below on their basal joints, not forming disks. Claws five on all toes. Tail depressed.

Section a.—Pupil vertical.

Back granular, with 6—8 rows of very small tubercles ... G. frænatus.
Body covered with flat sub-equal tubercles.. G. Dekkanensis.

Body with larger tubercles interspersed among the granular ones ... G. Lawderanus.
Back with 30 rows of larger tubercles ... G. Oldhami.
Back with 12—14 rows of large keeled tubercles separated by granular scales ... G. Kachensis.
Back granular, subcaudals not enlarged. Three white bars across the body ... G. speciosus.
Back granular. Subcaudals not enlarged. Four dark, white edged, 8-shaped spots across body ... G. Kollegalensis.
Back thickly covered with small trihedral tubercles. Subcaudals not enlarged. A line of arrow-headed spots down either side of spine ... G. Khasiensis.
Back granular, with many enlarged scales. Colour brown, clouded with dark blotches G. nebulosus.
Back profusely studded with small trihedral tubercles ... G. triedrus.

Section b.—Pupil circular.

Back coarsely granular ... G. Indicus.
Back finely granular, with a few acute tubercles ... G. Kandianus.
Back finely granular, with a few enlarged scales ... G. Sisparensis.
Back granular. A black blotch on the nape G. planipes.
Back coarsely granular with some enlarged scales. A vertebral row of a white blotches ... G. gracilis.
Back finely granular with some enlarged scales. Blackish with brown mottlings... G. Wynaadensis.
Back finely granular, with some enlarged scales. White marks on head and body... G. ornatus.
Back coarsely granular with some enlarged scales. Blackish, clouded with greyish white ... G. Beddomei.

Back granular. A row of spines down either side ... G. Jerdoni.

Back finely granular, with some enlarged scales, and some reflected spines along the belly ... G. Humei.

(Shape of pupil not recorded.)

Back granular with 2 or 3 distant rows of spines down each side ... G. Mysoriensis.

Back granular. A black spot on the nape. Some pale marks on back and tail. Chin yellow ... G. littoralis.

Back granular. Scales on the tail large and imbricate. A white spot on the nape ... G. Malabaricus.

Back with keeled tubercles, with some larger ones mixed. A vertebral row of white spots ... G. Wicksii.

Back with numerous rows of large keeled tubercles. 5 or 6 rows indistinct dark spots across the back ... G. Kaspicus.

Back granular, with transverse rows of trihedral tubercles. Two black collars on occiput and neck, and 7 black cross bars on the body ... G. fasciolatus.

Back granular, with numerous enlarged trihedral tubercles. Body black spotted. Tail black barred ... G. variegatus.

CYRTODACTYLUS.

Toes as in *Gymnodactylus*. Tail cylindrical.

Back with small and large tubercles mixed. C. rubidus.

PENTADACTYLUS.

Toes as in *Gymnodactylus*. Claws retractile within a compressed bilobed sheath.

Præanal pores in five concentric rows ... P. Duvaucelii.

B.—Eyelids present.

EUBLEPHARIS.

No pneumatic plates below.

Eyelids present. Back tubercular, head black above, back black barred ... E. Hardwickii.

Similar to the last, but head marbled with ocelli and bars on body interrupted ... E. macularius.

TERATOLEPIS.

Toes with divided pneumatic plates below, not forming disks. Back covered with imbricate scales.

Toes with plates below. Back scaled ... T. fasciatus.

GECKOELLA.

Back tubercular, no præanal pores.

Toes thick at the base, ends slender, back tubercular ... G. punctata.

FAMILY AGAMIDÆ.

Lizards of small or moderate size.

Head covered with numerous convex shields. Tongue thick attached: not, or but slightly notched in front. Tail long, not fragile. Eyelids present. Habits diurnal. Food generally insects.

A.—Femoral or præanal pores none. (Tree Lizards.)

a.—Toes five on all feet.

DRACO.

Skin of sides expanded into a parachute.

Tympanum scaly ... D. maculatus.

Tympanum naked. A horn-like tubercle behind the orbit ... D. Dussumieri.

Tympanum naked. No postorbital tubercle D. tæniopterus.

OTOCRYPTIS.

No parachute. Tympanum hidden. Gular sack in males. Hind legs longer than body.

Limbs long. A gular sack in males ... O. bivittata.

Lyriocephalus.

Nose humped or horned in males

Nose humped. A gular sack ... L. scutatus.
Nose horned. No gular sack ... L. Stoddartii.
Nose surmounted by a scaled fleshy appendage. No gular sack ... L. Tennentii.
Nose surmounted by a cylindrical fleshy appendage. No gular sack ... L. asper.

Cophotis.

Body covered with very large irregular scales.

A small tubercle behind the rostral in males.
A gular sack in both sexes ... C. Ceylonica.

Japalura.

Body covered with small scales with larger interspersed. Hind legs shorter than body.

A gular sack in males; and a throat fold in both sexes. Back variegated ... J. variegata.
Like the last, but smaller scales ... J. microlepis.
Back flat without nuchal or dorsal crest ... J. planidorsata.

c.—Four toes only on hind feet.

Sitana.

Tympanum naked. Gular sack large. Dorsal crest none.
Toes 5·4. A gular sack in males ... S. Pondiceriana.

Dilophyrus.

Gular sack small. Nuchal and dorsal crest very large.
Gular sack small. Tail very long ... D. grandis.

d.—Five toes on all feet. Tympanum naked.

Bronchocela.

Scales of back equal. Tips directed backwards and downwards.
About 40 scales between vertebral line and belly ... B. cristatella.

About 20 scales between vertebral line and belly. Enlarged scales between the eye and tympanum ... B. jubata.

Colour olive. A white streak from eye to tympanum ... B. Indica.

BRACHYSAURA.

Head enormous, otherwise like *Calotes.*

Head enormous ... B. ornata.

CALOTES.

Scales of back equal, tips directed backwards and upwards.

a.—A fold before the shoulder.

A detached spine in front of some smaller ones on each side of the nape ... C. nemoricola.

Two groups of small spines over each tympanum ... C. mystaceus.

Two small groups of spines on each side of the neck ... C. Rouxii.

A single series of spines over the tympanum C. ophiomachus.

A spine behind the superciliary ridge ... C. Elliotti.

Three to six spines behind the tympanum... C. nigrilabris.

Three small groups of spines on each side of the head ... C. Emma.

Enlarged spiny scales over the tympanum... C. Maria.

Colour green with a red stripe on either side of spine ... C. Jerdoni.

Two inconspicuous ridges of spines over the tympanum ... C. gularis.

No spines on the side of the head ... C. liocephalus.

b.—No fold before the shoulder.

Two small groups of spines over the tympanum ... C. versicolor.

Like '*versicolor*' but larger. No gular sack ... C. gigas.

Colour green ... C. viridis.

SALEA.

Scales of back strongly keeled and directed backwards. Nasal pentagonal.

Nasal pentagonal resting on the first labial.
Colour green, white spotted ... S. Horsfieldii.

ACANTHOSAURA.

Scales of the sides very small, smooth or quadrangular, with larger keeled scales interspersed. A spine behind the orbit.

Scales small, with large ones intermixed.
Colour greenish, with lighter spots. No gular sack ... A. armata.

TIARIS.

Scales on the back small, with larger ones interspersed. A gular sack in males.

Like Acanthosaura, but no gular sack ... T. subcristata.

(Rock or ground lizards.)

CHARASIA.

Scales of sides small, with larger ones irregularly interspersed.

a.—Tail round. A gular sack.

Scales of sides and belly equal ... C. minor.
Scales of belly conspicuously larger ... C. major.

b.—Tail round. No gular sack.

A slightly enlarged occipital scale ... C. tricarinata.

c.—Tail compressed. Sub-verticillate.

Scales sub-imbricate, keeled with enlarged ones intermixed ... C. dorsalis.
Like '*dorsalis*,' but with larger scales ... C. Blanfordiana.

d.—Tympanum hidden.

PHRYNOCEPHALUS.

Scales small; a few larger ones on the sacral region. Tail rounded, not verticillate.

Scales small, equal. Males with a black belly patch ... P. caudivolvulus.

B.—Præanal or femoral pores, or callous scales in their place. Tympanum naked.

STELLIO.

Scales unequal in size. Tail rounded, more or less verticillate, callous scales in place of pores.

Enlarged scales in 13 to 17 rows, not continued on the neck ... S. tuberculatus.
Enlarged scales in 8 rows ... S. melanurus.
Enlarged scales continued on the neck ... S. Dayanus.
Enlarged scales smooth ... S. Himalayanus.

TRAPELUS.

Scales unequal in size. Tail rounded.

Non-verticillate. Anal pores present.
Femoral pores none. Paratoids unarmed ... T. megalonyx.

AGAMA.

Scales rhombic, keeled. Tail elongate, non-verticillate.
Paratoids armed with spines. Anal pores.
Femoral pores none. ... A. agilis.

(Sand lizards, burrowers, gregarious.)

Scales of back granular. Tympanum naked.

LEIOLEPIS.

Skin of sides lax, forming a pseudo-parachute.

Femoral pores. Herbivorous.
Sides handsomely barred ... L. guttatus.

UROMASTIX.

Scales of back granular. Tympanum naked. No pseudo-parachute. Femoral and præanal pores. Herbivorous.
Tail excessively spiny. Colours dull ... U. Hardwickii.

FAMILY CHAMÆLIONIDÆ.

Tail prehensile. Toes zygodactylous. Eyes telescopic, moving independently. Habits diurnal. Food insects.

Chamæleo.

Characters of order.

Colours vary under emotion ... C. vulgaris.

Order OPHIDIA.

Sub-Order.—Innocuous Snakes.

Poison gland, none.

Family TYPHLOPIDÆ.

Ventral scales not enlarged. Mental groove none. Upper labials four. Snout covered with large shields. Rostral rounded.

Typhlops.

Frontinasal in contact with second labial.

Scales in 26 longitudinal rows ... T. Horsfieldii.
Scales in 24 longitudinal rows. Snout simple ... T. striolatus.
Scales in 24 longitudinal rows. Snout grooved ... T. bothriorhynchus.
Scales in 22 longitudinal rows. Tail long... T. Theobaldanus.
Scales in 22 longitudinal rows. Tail short.. T. tenuicollis.
Scales in 18 longitudinal rows. Body very slender ... T. porrectus.
Scales in 18 longitudinal rows. A lower præocular ... T. Andamanensis.

Frontinasals separated from the labials.

Scales in 20 longitudinal rows. Habit moderate ... T. braminus.
Scales in 20 longitudinal rows. Habit very slender ... T. pammeces.
Scales in 18 longitudinal rows. One præ- and one sub-ocular ... T. mirus.

Onychocephalus.

Snout covered with large shields. Rostral sharp edged in front. Bronze above, yellowish below ... O. acutus.

FAMILY TORTRICIDÆ.

Ventral scales slightly enlarged. A mental groove. Upper labials four.

CYLINDROPHIS.

Nostril in a large undivided nasal. Eye small. Pupil round.

Width of interocular space longer than the snout ... C. rufus.

Width of interocular space equal to that of the snout ... C. maculatus.

FAMILY UROPELTIDÆ.

Tail truncated, short. Terminating in a rough disk or covered with keeled scales.

RHINOPHIS.

Nasals separated by the rostral

Rostral keeled above. Brownish ... R. oxyrhynchus.

Rostral keeled above. Yellowish, black dotted ... R. punctatus.

Rostral much less than half the length of the head ... R. planiceps.

A row of triangular white spots along the sides ... R. Trevelyanus.

Belly and sides red, with black spots ... R. sanguineus.

Caudal very small, snout pointed ... R. Blythii.

Caudal very small, snout obtuse ... R. Pulneyensis.

Caudal small, bicuspid ... R. grandis.

UROPELTIS.

Tail terminating in a flat rough scaleless shield.

Tail obliquely truncated, disk scabrous ... U. grandis.

SILYBURA.

The supraorbital and postocular united.

Terminal scale of tail horizontal.

Disk flat, scales on it, 1—2 keeled ... S. macrolepis.

Disk ill-defined ... S. Beddomei.
Disk long. Scales on it with 3—4 keels ... S. ocellata.
Disk ill-defined, long. Scales on it with 3—4 keels ... S. Elliottii.
Disk flat, with a terminal bicuspid scale. Scales black with a yellow margin ... S. bicatenata.
Disk flat with a terminal bicuspid scale. Black with some white scales ... S. Shortii.
Disk flat. Scales on it 2 keeled ... S brevis.
Disk prominently 2 keeled, red blotches on the sides ... S. rubromaculata.
Disk ill-defined. Black, brownish anteriorly S. Wood-Masoni.

PLECTRURUS.

The supraorbital and postocular distinct. Terminal scale of tail vertical.
Scales in 15 rows. Uniform brown ... P. Perrotetii.
Scales in 15 rows. Purple above, yellow below ... P. Güntheri.
Scales in 15 rows. Top of tail flattened vertically ... P. scabricauda.
Scales in 15 rows. Caudal disk vertically compressed (laterally). Scales on it 3—5 keeled ... P. Kanaricus.
Scales in 15 rows. Terminal scale of disk, pustulose above, grooved below ... P. trilineatus.
Scales in 17 rows. Black above, red below. P. sanguineus.

MELANOPHEDIUM.

Scales of tail smooth. Tail ending in a horny point.
Terminal scale pointed. Black ... M. Wynaadense.
Terminal scale pointed. Black, with lateral yellow stripe ... M. bilineatum.
Terminal scale bicuspid. Black above, whitish below ... M. punctatum.

Family CALAMARIDÆ.

Snakes of small or moderate size, with some of the head shields united. Loreal none.

Calamaria.

One pair of frontals. Four or five upper labials.

11 Black lines down the back ... C. Siamensis.
4 black lines down the back ... C. catenata.

Macrocalamus.

One pair of frontals. Eight upper labials. M. lateralis.

Blythea.

Two pair of frontals. Six upper labials. Anal bifid.

Colour black ... B. reticulata.

Geophis.

Two pair of frontals. Five or six upper labials. Anal entire.

3 rows of dark spots down the back ... G. microcephalus.

Aspidura.

One anterior frontal.

Belly white ... A. brachyorros.
Belly marked with black ... A. trachyprocta.
No præcular. Belly marked with black ... A. Copii.
Belly dull yellowish, immaculate ... A. Cyloncnsis.

Family OLIGODONTIDÆ.

Head not distinct from neck. Maxillary teeth few, the last enlarged, not grooved. Rostral large, extended backwards. Pupil round.

Trachischium.

Scales in 13 rows, granulosely keeled in the ischiatic region only.

Colour brownish black, obscurely pale streak ... T. fuscum.

Grotea.

Scales smooth in 17 rows. One præfrontal and one postfrontal.

Plumbeous above, white below ... G. bicolor.

Falconeria.

Scales faintly keeled in 17 rows. One præfrontal, two postfrontals.

Five upper labials ... F. Bengalensis.

Oligodon.

Scales smooth in 15 to 17 rows. Two postfrontals.

Scales in 15 rows.

7 upper labials. Belly white. Irregular black cross streaks on back ... O. sub-griseus.

7 upper labials. Belly white. Back with 17 8-shaped brown spots ... O. spilonotus.

7 upper labials. Belly white. Back with 37 large rhombic black spots ... O. Elliotti.

8 or 9 upper labials. Belly white: (scales ? rows). Scuta black dotted ... O. sub-punctatus.

7 upper labials. Belly irregularly brown spotted ... O. fasciatus.

7 upper labials. Belly with three series of brown dots ... O. sub-lineatus.

7 upper labials. Belly with quadrangular black spots ... O. Templetonii.

6 upper labials. Belly with quadrangular black spots. Loreal none ... O. modestus.

7 upper labials. Belly with quadrangular black spots. A yellow vertebral line ... O. dorsalis.

7 upper labials. Belly with quadrangular black spots. One pair of frontals ... O. brevicauda.

Scales in 17 rows.

8 or 9 upper labials. Belly white ... O. spinipunctatus.

7 upper labials. Belly with quadrangular black spots ... O. affinis.

Simotes.

Scales smooth, in 17 to 21 rows. Præfrontals narrow. Nasals two.

Scales in 17 rows. Anal bifid. Loreal none.

Belly white ... S. albiventer.
Belly black checquered ... S. venustus.

Scales in 17 rows. Anal bifid. Loreal present.

Belly white. Back, black barred ... S. Russellii.
Belly white. Back chequered with lozenge spots ... S. binotatus.
Belly black blotched. Tail red beneath ... S. cruentatus.
(Anal ?). Belly black blotched. 2 Præoculars ... S. semifasciatus.
Belly with square black spots. Back with narrow black bars ... S. Theobaldi.

Scales in 19 rows. Anal entire. Loreal present.

One or two equal præoculars. Belly blotched ... S. punctatus.
Lower præocular smallest. Scuta with a dot on the side ... S. bicatenatus.
Back barred with dark edged white stripes S. albocinctus.
Back barred with black edged yellow bars. One scale broad ... S. amabilis.

Family COLUBRIDÆ.

Group a.

Coronellina.

Snakes of small size, sub-equal teeth and smooth scales in 13 to 17 rows.

Ablabes.

Ventrals not keeled. One loreal, two nasals.
Scales in 13 rows. Keeled in the ischiatic region in the male. Upper labials six ... A. tenuiceps.

Scales in 13 rows. Upper labials eight. Loreal very small ... A. scriptus.
Scales in 15 rows. Upper labials six ... A. Rappii.
Scales in 17 rows. Upper labials five. Two præoculars. One nasal ... A. olivaceus.
Scales in 17 rows. Upper labials 7. Loreal united with postnasal ... A. Nicobarensis.
Scales in 17 rows. Upper labials seven. One præocular ... A. sagittarius.
Scales in 17 rows. Upper labials ten. Two posterior temporals: head black ... A. bistrigatus.
Scales in 17 rows. Upper labials ten. Two posterior temporals: head brown ... A. Humberti.
Scales in 17 rows. Upper labials ten. One posterior temporal ... A. collaris.

CYCLOPHIS.

Scales in 15 rows. One nasal.

Anterior part of body with black longitudinal bands ... C. frænatus.
Loreal united to nasal. One præocular ... C. calamaria.
Loreal united to nasal. Two præoculars ... C. nasalis.
Loreal longer than high. 6 upper labials. Anal bifid ... C. monticola.
Loreal small. 6 upper labials. Anal entire. C. catenatus.
Nasal divided posteriorly. Three last upper labials sub-equal ... C. rubriventer.
Nasals two ... C. Oldhami.

ODONTOMUS.

Scales in 13 to 15 rows.. Ventrals keeled.
Scales in 13 rows. Upper labials eight. Anal bifid ... O. nympha.
Scales in 13 rows. Upper labials seven. Anal bifid ... O. semifasciatus.
Scales in 15 rows. Upper labials eight. Anal entire ... O. gracilis.

Coronella.

Scales in 17 to 23 rows. Ventrals not keeled.

Brown, with white collar ... C. orientalis.

Nymphophidium.

Two bony processes from the base of the skull, which protrude through the mucous membrane of the mouth.

Brown, with two rows of dark spots ... N. maculatum.

Elachistodon.

The spinous processes of the cervical vertebræ protrude through the lining of throat forming gular and œisophageal teeth.

Brown, with a yellow vertibral stripe ... E. Westermanni.

Group b.—Colubrina.

Snakes of moderate or large size. Scales in not less than 19 rows (except in Ptyas), often up to 27 rows smooth or keeled.

Cadmus.

Scales smooth in 27 rows. Head cuneiform.

Rostral large. Nasals two ... C. cuneiformis.

Coluber.

Scales smooth or partly keeled in 19 to 27 rows. One loreal. 2 præoculars.

Scales in 19 rows. Upper labials 8 ... C. porphyraceus.

Scales in 23 rows ... C. Nuthali.

Compsosoma.

Scales keeled in 19 to 23 rows. 1 præocular.

Scales in 19 rows, smooth, with two minute apical grooves ... C. semifasciatum.

Scales in 19 rows, keeled. Posteriorly blackish ... C. melanurum.

Scales in 19 rows, keeled. A black streak across the end of the occipitals ... C. radiatum.

Scales in 21 rows, keeled. Numerous reticulating pale bands ... C. reticulare.
Scales in 23 rows, keeled ... C. Hodgsonii.

CYNOPHIS.

Scales keeled or with apical grooves in 25 to 27 rows. 1 præocular.
Scales in 25 rows ... C. Malabaricus.
Scales in 27 rows ... C. Helena.

PTYAS.

Loreals 1 to 3. Scales in from 15 to 17 rows. Smooth or faintly keeled.
Scales smooth in 17 rows. Loreal one ... P. hexagonotus.
Scales partly keeled in 17 rows. Loreals three ... P. mucosus.
Scales mostly smooth in 15 rows. Loreals two ... P. korros.

ZAMENIS.

An interspace before the lengthened posterior maxillary teeth.

Scales in 19 rows. A semi-circular shield behind each occipital ... Z. ventrimaculatus.
Scales in 21 rows. Upper labials nine. Anal bifid ... Z. gracilis.
Scales in 21—23 rows. Upper labials eight. Anal bifid ... Z. fasciolatus.
Scales in 23 rows. Anal entire ... Z. brachyurus.
Scales in 29 rows. Loreals three or four ... Z. diadema.

Group c.—Dryadina.

Tree colubrines. Body rather compressed.

ZAOCCYS.

Scales in 14 or 16 rows.

One loreal. Four median rows of scales, keeled ... Z. nigromarginatus.

HERPETOREAS.

Last lengthened maxillary in a continuous line with the rest.

Ventrals strongly bent at the side ... H. Sieboldii.

Group d.—Natricina.

Freshwater Colubrines.

TROPIDONOTUS.

Scales keeled. Two præfrontals.

Scales smooth in 15 *rows.*

1 præocular. 3 postoculars ... T. punctulatus.
1 præocular. 3 postoculars. Nape black banded ... T. zebrinus.

Scales smooth in females, faintly keeled in males in 19 *rows.*

Upperlabials 8. 1 præocular. 2 postoculars T. platyceps.

Scales keeled in 17 *rows. Upper labials* 8.

1 præocular. 3 postoculars ... T. macrops.
2, 3 or 4 præoculars. 4 or 5 postoculars ... T. angusticeps.
Penultimate and preceding upper labial large ... T. nigrocinctus.

Scales keeled in 19 *rows.* 9 *upper labials,* 3 *entering the orbit.*

"Well developed valvules in the nostrils" T. quincunciatus.
Occipitals larger than vertical ... T. junceus.
Occipitals nearly equal, vertical and postfrontals ... T. Beddomei.
Præfrontals smaller though longer than postfrontals ... T. bellulus.

Scales keeled in 19 *rows.* 8 *upper labials,* 3 *entering the orbit.*

Præfrontals sub-truncate in front ... T. subminiatus.
Præfrontals pointed in front ... T. stolatus.
Præfrontals truncated in front. Green with black cross bars ... T. monticola.

Scales keeled in 19 rows. 8 upper labials, 2 entering the orbit.

One præocular. Three postoculars ... T. Himalayanus.
Two præoculars. Three postoculars ... T. Ceylonensis.

Scales keeled in 25 rows. 7 upper labials, 2 entering the orbit.

Two præoculars. Three postoculars ... T, plumbicolor.

(Note.—The number of scales is that in the centre of the body, on the neck there are two more rows.)

Atretium.

Scales keeled. One præfrontal.

Back blackish olive ... A. schistosum.

Xenocrophis.

Scales keeled. One nasal.

Belly purple; dark mottled ... X. cerasogaster.

Family HOMALOPSIDÆ.

Freshwater or estuarine snakes. Nasals large. Nostrils small, valvular. Eye small. Ventrals narrow. Caudals bifid.

a.—Scales smooth.

Gerarda.

Scales in 17 rows. One præfrontal.

Muddy olive with white lateral line ... G. bicolor.

Cantoria.

Scales in 19 rows. A ring of orbital plates.

Dull yellow with numerous dark bands ... C. Dayana.

Fordonia.

Scales in 25 to 29 rows. One præfrontal.

Eye over the fifth labial ... F. bicolor.
Eye over the third labial ... F. unicolor.

Hypsirhina.

Scales in 19 to 23 rows. One præfrontal.

Scales in 19 rows ... H. plumbea.
Scales in 21 rows ... H. enhydris.

FERANIA.

Scales in 27 rows. Two præfrontals.

Scales in 29 rows. Two small præfrontals... F. Sieboldii.

HIPISTES.

Scales in 39 rows.

Colouration of a Hydrophis ... H. hydrinus.

b.—Scales keeled.

CERBERUS.

Occiput scaly.

A ring of orbital shields ... C. rhynchops.

HOMALOPSIS.

Occiput shielded.

Brownish olive with dark bars ... H. buccata.

FAMILY ACROCHORDIDÆ.

Head covered with scales. Nostrils at the top of the snout. Viviparous.

CHERSYDRUS.

Scales tubercular in over 100 rows.

Colour yellow and gray, banded ... C. granulatus.

FAMILY PSAMMOPHIDÆ.

Scales smooth. Head distinct. Eye round or vertical. The last maxillary tooth grooved.

PSAMMOPHIS.

Scales lanceolate in 15 to 19 rows

Anal bifid. Præocular does not reach vertical ... P. condanurus.

Anal entire. Præocular reaches to the vertical ... P. Leithii.

PSAMMODYNASTES.

Scales short, rhombic in 17 rows.

Head short and thick. Long fangs in front ... P. pulverulentus.

FAMILY DENDROPHIDÆ.

Body compressed, elongate. Scales narrow. Pupil round.

GONYOSOMA.

Scales in 19—25 rows. Two nasals. Green.

Scales in 25 rows ... G. oxycephalum.
Scales in 19 rows. Loreal present ... G. gramineum.
Scales in 19 rows. Loreal none ... G. frænatum.

DENDROPHIS.

Scales in 13 to 15 rows. Ventrals keeled.

Colour bronze with a black edged yellow lateral band ... D. pictus.

CHRYSOPELEA.

Scales in 15 to 17 rows. Ventrals tripartibly keeled.

Black with yellow spots ... C. ornata.

FAMILY DRYIOPHIDÆ.

Pupil horizontal, linear.

TRAGOPS.

Snout pointed.

Loreal none ... T. Perroteti.
Loreal present. 9 upper labials ... T. prasinus.
Loreal present. 8 upper labials ... T. dispar.
Nasal very elongate, separates the rostral from the præfrontals ... T. fronticinctus.
The fifth upper labial nearly equal the sixth ... T. Javanicus.

PASSERITA.

Snout with a flexible appendage.

A yellow band along either side of belly ... P. mycterizans.
Belly without bands ... P. purpurascens.

FAMILY DISADIDÆ.

Tree snakes with compressed body and short trigonal head.

Dipsas.

Body compressed. Head very distinct from neck.

Scales in 17—19 rows. Four rows of spots down the back ... D. multimaculata.

Scales in 19 rows. Dark gray finely powdered with brown ... D. Barnesii.

Scales in 17—21 rows. Reddish brown. Anal bifid ... D. hexagonota.

Scales in 17—19 rows. Uniform ochraceous. D. ochracea.

Scales in 19—21 rows. Yellowish with a black edged pale zig-zag band down the back ... D. trigonata.

Scales in 19—21 rows. Light brown with a double row of black dorsal spots ... D. Ceylonensis.

Scales in 21 rows. Green. Anal entire ... D. bubalina.

Scales in 21 rows. A straight yellow vertebral line ... D Gokool.

Scales in 21 rows. Reddish spotted with brown and black in longitudinal and transverse rows ... D. boops.

Scales in 25—27 rows. Nostril rounded, below præfrontal ... D. Forsteni.

Family LYCODONTIDÆ.

Head depressed. Eye small. An enlarged maxillary tooth in front.

a.—Scales smooth.

Lycodon.

Loreal present. Two nasals.

One loreal. Præocular in contact with vertical ... L. aulicus.

One loreal. Præocular not in contact with vertical ... L. striatus.

One loreal pointed behind ... L. jara.

Two loreals ... L. Anamallensis.

Tetragonosoma.

Loreal none. Two nasals.

Loreal none. Purple, marbled with black and white ... T. atropurpureum.

b.—Scales keeled or grooved.

Ophites.

Scales in 17 rows.

Pale reddish with 50 brown cross bands ... O. albofuscus.
Two yellow dots on each scale ... O. jara.

Cercaspis.

Scales in 17 to 19 rows. Subcaudals entire.

Colour black, encircled with white rings ... C. carinata.
Colour black with white bars ... C. Travankorica.

Family AMBLYCEPHALIDÆ.

Body slender, compressed. Head short, distinct. Nasal one. Mandible not expansile.

Pareas.

Caudals bifid.

Loreal none. A small lower præocular ... P. monticola.
Loreal none. One large præocular ... P. lævis.
Loreal small ... P. margaritophorus.
Loreal moderate. Two small præoculars ... P. modestus.

Family XENOPELTIDÆ.

Occiput covered by five shields. Eye small.

Xenopeltis.

Scales lustrous, smooth in 15 rows.

5 occipitals. Loreal none ... X. unicolor.

Family PYTHONIDÆ.

Large snakes with a spur-like prominence in adults, indicating an aborted pelvic limb, on each side of the vent.

Python.

The anterior portion only of the crown covered with symmetrical shields.

A black median line from the rostral to neck ... *P. reticulatus.*

A brown lanceolate spot on the crown and nape ... *P. molurus.*

Family ERYCIDÆ.

Tail short. Caudals entire. In adults a short conical prominence in a groove on each side of the vent.

Cursoria.

Scales smooth.

Scales smooth. A pair of small frontals ... *C. elegans.*

Gongylophis.

Scales keeled. Mental groove none.

A dorsal series of quadrangular blotches. No mental groove ... *G. conicus.*

Eryx.

Scales keeled. Mental groove present.

Adult reddish brown. A mental groove. Scales keeled ... *E. Johnii.*

II.—SUB-ORDER POISONOUS COLUBRINE SNAKES.

A poison gland present. A short grooved non-erectile poison fang.

Family ELAPIDÆ.

Tail conical. Terrestrial. Pupil round. Loreal none.

Naija.

Neck more or less dilatable. Scales smooth in 15 rows on the body.

A well marked hood on the neck ... *N. tripudians.*

No hood. Some caudals undivided ... *N. cla*

Bungarus.

Scales smooth in 15 rows. The vertebral scales enlarged. Body ridged.

Black, marked more or less with white	... B cæruleus.
Black and yellow banded	... B. fasciatus.
Head and vertebral line bright red	... B. flaviceps.

Callophis.

Body sub-cylindrical, very long and slender. Scales smooth in 13 rows.

6 upper labials. A vermilion vertebral line	C. intestinalis.
6 upper labials. Head and neck black with a yellow (red ?) band behind the eyes ...	C. annularis.
6 upper labials. Head and neck black yellow spotted. Belly red ...	C. trimaculatus.
7 upper labials. A chain of distant black dots down either side of spine ...	C. maculiceps.
7 upper labials. Back blackish, belly red...	C. nigrescens.
7 upper labials. A yellow band across the head behind the eyes ...	C. MacClellandii.
7 upper labials. 40 black bars down the back. Belly red ...	C. cerasinus.
7 upper labials. 5 black longitudinal bands	C. pentelineatus.

Xenurelaps.

Like 'Bungarus' but body sub-cylindrical, long and slender.

Black with narrow white bars directed forward ...	X. bungaroides.

III.—SUB-ORDER VIPERINE SNAKES.

Poison gland present. A long perforated, erectile fang on a very short maxillary bone.

Family VIPERIDÆ.

No pit in the loreal region.

Daboia.

Nostril very large. Caudals double.

Pattern distinctly ocellated ... D. Russellii.

Echis.

Caudals single.

Pattern trapezoidal ... E. carinata.

Family CROTALIDÆ.

Loreal region with a pit between the eye and nostril.

Trimeresurus.

The fore part only of the head shielded.

a.—The second upper labial forms the front margin of the labial pit.

Scales in 17 to 19 rows. Four shields on the snout. Green reticulated with black and yellow ... T. trigonocephalus.

Scales in 19 to 21 rows. The supranasals separated by one or two plates. Green... T. gramineus.

Scales in 21 rows. Supranasals generally separated. Green with black and yellow markings ... T. Anamallensis.

Scales in 21 rows. The supranasals in contact. Green ... T. erythrurus.

Scales in 23 rows. Supranasals in contact Gray, brown spotted. The last 6 subcaudals entire ... T. labialis.

Scales in 23 to 25 rows. Supranasals separated. Green ... T. carinatus.

Scales in 23 (rarely 25) rows. Supranasals separated. Brown, black spotted ... T. monticola.

Scales in 25 rows. Supranasals separated by a large shield. Dull green, with indistinct porphyraceous spots ... T. porphyraceus.

Scales in 27—31 rows. Supranasals separated by a small shield. Green dark spotted ... T. Cantori.

b.—The shield in front of labial pit, distinct from the second labial.

Scales in 25 rows. Supranasals separated by a shield. Brown ... T. Andersoni.

Scales in 21 rows. Supranasals separated. Brown with the greenish white side, stripes enclosing a brown band ... T. mutabilis.

Scales in 21 rows. Brown, dark spotted ... T. strigatus.

c.—Imperfectly known species.

Brownish gray with black, white edged rings ... T. mucrosquamatus.

PELTOPELOR.

Crown of head covered with very large scales.

Green with yellow side streak ... P. macrolepis.

HALYS.

Head entirely shielded. Scales in 23—27 rows.

Dark brown indistinctly barred ... H. Himalayanus.

Olive green ... H. Elliotti.

HYPNALE.

Head shielded. Scales in 17 rows.

Brown, barred and marbled ... H. nepa.

Appendix.

ON THE MEANS OF DISCRIMINATING

BETWEEN

POISONOUS AND HARMLESS SNAKES,

AND

THE TREATMENT OF SNAKE BITE.

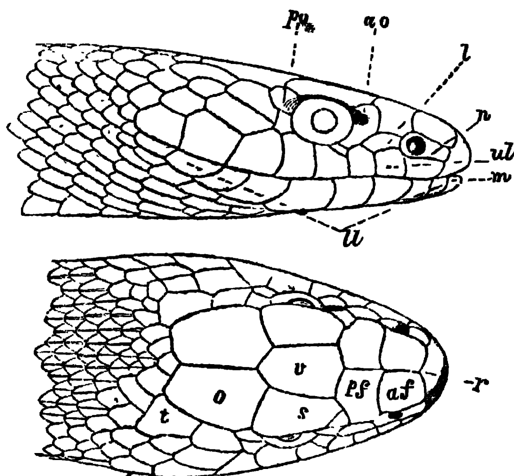
THERE are few subjects, respecting which more profound ignorance prevails, than the means of determining whether a snake is poisonous or not; for the question is eminently a special one, though neither difficult or obscure when once the few facts and rules are mastered, which are necessary for the purpose. With the exception of a few well known and justly dreaded snakes, like the *Cobra*, the *banded Bungarus*, the *blue Bungarus*, or *krait*, or the *Russell's viper*, no native testimony in regard to the poisonous or nonpoisonous character of a snake can be relied on, as natives generally attribute poisonous powers to all snakes with which they are unfamiliar, or which have bright colours, or a repugnant physiognomy, and are as wholly guiltless of any accurate knowledge of the subject as the bulk of Europeans.

Practically, as regards poisonous snakes which are dangerous to man, the question is narrowed to the consideration of a limited

number of species, since many from their small size, and others from their rarity, may be disregarded, and hence perhaps, the simplest way of learning what are poisonous snakes, would be to pass an hour or so in some museum where acquaintance might be made with the commoner or more deadly species. The snakes I should characterise under this head, would be, 1stly, the Hydrophidæ, or marine snakes, possessing a flattened tail, the whole of which are very deadly without exception, their fangs being small, but their venom extremely potent. 2ndly, the vipers possessing tubular erectile fangs of great length. The venom of some of these is very deadly as in the *Daboia*, or *Russell's viper*, and the Javanese *Calloselasma*, whose bite is said to be fatal to man in five minutes, which is far quicker than that of the *cobra*, whilst others of the family, the *green vipers*, seem to be less dangerous, recovery often taking place from their bite, with merely local pain and some constitutional disturbance. 3rdly, the ordinary poisonous snakes, such as the gigantic *Hamadryas*, the *Cobra*, the *blue Bungarus*, or *krait*, the *black and yellow banded Bungarus*, and some of the larger species of *Callophis*.

There are only two harmless snakes which, from their peculiar colouration and from their also inhabiting estuaries and coasts, can be mistaken for any of the poisonous family of Hydrophidæ. The one, *Hipistes hydrinus* has, however, a loreal shield which at once shows its innocuous character, whilst the other *Chersydrus granulatus* may be easily discriminated by possessing over 100 rows of scales. The poisonous viperine snakes are easily distinguished by their long tubular and erectile fangs, by their triangular head, keeled scales, and repulsive physiognomy, their short tails, stout form, and in the majority of Indian species by a *præorbital pit*, whence the name of one section of them of pit vipers, the most celebrated of which is the American Rattle snake. Among the ordinary venomous or colubrine snakes, the *Hamadryas* is undoubtedly the most formidable, whilst commoner than any, are the *Cobra*, the *blue* and the *banded Bungarus*, the bulk of the other Elapidæ being too small or too rare to merit

particular notice. To determine a snake, it is necessary first to become familiar with the shields which cover the head which the study of the figure here given of a snake's head will effect.



The first shield is the *rostral, r*. Behind it comes a pair of anterior or *præfrontals, af,* followed by another pair of *postfrontals, pf.* Behind the postfrontals comes the *vertical, v,* followed by a pair of *occipitals, o,* and below the occipitals come in the *temporals, t.* The shield or shields surrounding the nostrils are the *nasals, n*; and behind the nasals, the *loreal, l.* In front of the eye comes the *præocular, o*; above it, the *superciliary*; and behind it the *postocular, p o,* whilst along the lip come in the *upper labials, ul.* The mandible or lower jaw is covered by the *mental, m*; in front, and by the *lower labials, ll*; behind, and behind the mental, follow the *chin shields.* The belly scales are termed *ventrals,* or *abdominals,* the one in front of the vent, the *anal*; and those beneath the tail, *caudals,* or *subcaudals.*

On a snake being brought in, the first point to ascertain is whether or no it has a loreal shield, *for the rule is absolute, and without exception, that every snake possessing a loreal shield is harmless.* If no loreal shield is present, a very brief inspection will show if it belongs to the Hydrophidæ with a

flattened tail; or to the Crotalidæ or Viperidæ with erectile tubular fangs and rough scales, and if to neither of these groups, it still remains to determine whether it belongs to one of the innocuous species which possess no loreal or to a poisonous species, *none* of which possess it. The poisonous Elapidæ are all characterised by a small eye with a round pupil and by the presence of a venom fang, grooved in front, and terminating in a slit. There are only four genera, and if the snake under consideration belongs to none of these, it is harmless, though no loreal is present. The four genera of poisonous colubrine snakes are:

NAJA.

Scales round the body in 15 rows; more numerous on the neck, which is dilatable. There are only two species: the *Hamadryad*, N. elaps, which has some of the anterior subcaudal shields single, in other respects resembling a gigantic Cobra; and the *Cobra*, N. tripudians, which is too well known to need description.

BUNGARUS.

Scales round the body in 15 rows; those of the vertebral series enlarged. Subcaudal shields entire, all or some. The best known and most dreaded species of this genus is the '*krait*,' B cæruleus. Colour brown or black with a blue iridescence, and generally some narrow transverse white bars or markings across the back. A second common species is the banded Bungarus, B fasciatus, a large snake, alternately black and yellow banded, the rings encircling the body. A closely allied species from Ceylon has been specifically separated by Günther. A fourth species only found in Tenasserim (Borneo, Java, &c.) is B flaviceps body black, head bright red, with a narrow vertebral red line; and some of the subcaudals bifid.

XENURELAPS.

The sole species of this genus is small and rare. It differs from CALLOPHIS in having the vertebral rows of scales enlarged, and scales in 15 rows.

Callophis.

Body long and slender. Tail short. Scales smooth, in 13 rows, the vertebrals not being enlarged.

These snakes do not usually allow a large size, neither do they display the ferocity so often seen in the Hamadyas, Cobra, or Vipers.

They are easily recognised by their long slender bodies and a peculiar style of colouration, in which black and red predominate. During life the red is very bright, but fades in spirits to yellow. Natives usually have an intense dread of them, but from their minute fangs, specimens under one foot in length cannot be esteemed very dangerous, though full grown individuals should be as carefully handled as a Cobra of equal size. For descriptions of the species reference may be made elsewhere.

The number of poisonous snakes is therefore practically very few, but a great many harmless snakes are equally unprovided with a loreal scale, of which a list is here appended for convenience of reference.

The snake is harmless though the loreal shield be absent.

If the scales are smooth and the nostril in an undivided shield — Cylindrophis.
If there are five occipitals — Xenopeltis.
If the tail is truncated — Fam — Uropeltidæ.
If there are less than 6 upper labials — Calamaria.
If there are 8 upper labials — Macrocalamus.
If the nostril is in a single shield — Blythea.

Cyclophis.
Odontomus.
Pareas.

If the præocular is elongate and the body stout — Geophis.
If there is but a single præfrontal — Aspidura.

Oligodon brivicauda. Fordonia.

If the third upper labial of six, forms the lower rim of the orbit — Oligodon modestus.

If the scales exceed 15 rows — Gonyosoma frænatum Tetragonosoma.

If the tail is flattened and the scales exceed 100 rows — Chersydrus.

If the pupil is horizontal — Tropidococcyx. Passerita.

To more easily follow the rules I have laid down above, let the seeker for herpetological knowledge commence the study by comparing the heads of any of our commoner venomous snakes, say the Cobra, with the head of a common paddy field snake, the Dahmin' (*Ptyas mucosos*) or the omnipresent little 'Hul-hullia' (*Tropidonotus stolatus*) with any species of viperine snakes procurable. A single examination of the scales (with a small lens if necessary) will give greater familiarity with the above details than pages of description and in less time than is taken in reading the above remarks.

Other points which serve to determine the species to which an unknown snake belongs, are the number of rows of scales which encircle the body: if the scales are smooth or keeled, the number of ventral scales and caudals, if the anal is entire or divided, if the pupil is round, vertical or horizontal: and any other peculiarity either in form or structure that the specimen may present.

As regards the treatment to be pursued in cases of snake-bite, it would seem as though the only remedy of the slightest value in the case of the effective bite of a venomous snake, is a ligature applied within a few seconds of receiving the injury, and either suction or excision of the wounds. If the poison once gains an entry into the system, it is next to useless drenching the unfortunate patient as is too often done with either such antidotes as ammonia, ardent spirits or any so-called specifics, or torturing him with the actual cautery of live coals, gunpowder, &c., or hounding the poor man about till he dies to prevent his sinking into sleep. If the patient does not object to it, a glass or two of brandy and water might be given, as cases sometimes occur

where nothing more than fear is the cause of very alarming prostration, and in such cases a stimulant would do good; as where a man has been bitten by a harmless snake, which he believes to be a Cobra. I once heard of a man who walking in the dark, trod on one end of a thin coil of tin plate, the other end of which flying up, slightly punctured one of his calves. The impression on the man was, that he had been bitten by a large snake, and an alarming state of prostration supervened, which however was cured by some one going out and finding the cause of the mischief. It cannot, therefore, be too widely known that in the case of snake bite, the sufferer's life is in his own hands, as nothing but instantly sucking the wound, with or without ligaturing it, can prove of the slightest value, all recoveries from snake bite, under treatment, being cases which would probably have recovered no less speedily without it—Dr. Fayrer treats this subject exhaustively in his elegant and valuable work on the Thanatophidia, and recommends such heroic treatment not only as actual cautery with live coals or gunpowder, or the free use of mineral acids after excision of the bite, but even amputation of a limb to save life. Doubtless in the hands of intelligent medical men such remedies are not to be altogether condemned, but to recommend such treatment in general, seems to me to risk subjecting the unhappy sufferer to fruitless agony at the hands of anxious but wholly ignorant friends, without the smallest possible chance of any good resulting from such a course. As for amputation as a suggested remedy, it is to be remembered that a few seconds, 3 to 15 say, suffice for the transmission through the body of the poison, and if a ligature has been applied in time, such a desperate operation is uncalled for, if not, and the poison has entered the system, amputation of a limb, or all four limbs would hardly alter the event. Doctors perhaps are justified in neglecting the Roman rule *nec propter vitam vivendi perdere causas*, but it is an element that deserves consideration, but on this point a difference of opinion is necessarily to be expected. It is moreover to be regretted, I think, that Dr. Fayrer has rather discountenanced the most efficacious and handy mode of cure

suction, on the ground of the risk to the operator, but surely the risk is not so *very* great, the poison thus extracted from the wound being largely mixed with blood and saliva and not retained in the mouth for any time, but quickly spat out. I should have no hesitation myself in sucking a wound inflicted by either a snake or mad dog, though the presence of any ulcer or wound in the mouth would doubtless add to the chance of untoward symptoms, resulting. I cannot resist here extracting the philosophic remarks of Dr. Fayrer on the prevalent mode of worrying to death the unfortunate victim of snake-bite. "But another popular mode of treatment of the so called lethargy induced by the poison, that by walking the person violently about and keeping him awake by flogging, pinching and other such violent measures is in my opinion of very doubtful efficacy, if not altogether wrong. *The man who is dying from snake bite is perishing from rapid exhaustion of nerve force.* To make him take violent exercise and deprive him of rest seems to me more likely to do harm than good. It would be almost as reasonable to give a man a blow on the head to recover him from concussion of the brain, or to give him antimony to cure him of seasickness. Let him lie down. Leave him to rest, to sleep if he can."

Speaking of chemical antidotes Dr. Fayrer thus expresses himself: "I have no hesitation in saying that I believe them to be useless and that excepting for their stimulant action when they have any, they are inert. When the symptoms of poisoning have set in, either when the ligature and excision or caustic or cautery have failed, or when they have not been used, I believe that the only rational treatment is to endeavour to rouse the sinking energies and arrest the tendency to fatal paralysis of the nerve force, by the aid of alcohol or other stimulants such as ammonia or ether judiciously administered, avoiding anything that can depress, such as over exertion or fatigue, especially that produced by the popular practice of making the sufferer walk when his force is almost expended. Brandy or whisky or indeed any form of alcohol should be given freely and frequently though not in the large quantities sometimes recommended.

My belief is that if a certain quantity of the poison has entered the circulation, we can expect but little benefit from treatment of any kind; where less has entered, yet enough to cause dangerous present and consecutive symptoms, we may do much to support the strength and save life by ordinary rational measures. But that we possess any drug or substance, solid or fluid, that either swallowed or inoculated can counteract or neutralize the poison once absorbed, and acting on the nerve centres, I do not believe,—and I think the notion that we do is a dangerous one, and liable to do harm by inspiring confidence in ways and means, in which none should be placed." Thanatophidia, pp. 38, 39.

To show how small is the chance of recovery from an effective bite of a venomous snake in possession of its full powers, I will quote three experiments from Dr. Fayrer's work, together with the reflection suggested by them.

June 26th, 1869, *Experiment No.* 15.—"A Pariah dog was bitten in the fore arm by a Cobra (kala keautiah) at 3-2 P.M. A ligature had been thrown round the limb above the bitten part, which was immediately tightened. A pointed steel, heated to a red heat, was then, at 3-3 P.M., inserted into the punctures and the wounds were thoroughly cauterised." Forty drops of liquor ammonia, in three parts water, were also injected into the jugular vein, but the dog died in 43 minutes.

Experiment No. 16.—A dog was bitten by a fresh Cobra (kala keautiah) in the fore arm at 3-38 P.M.; a ligature was immediately tightened round the limb above the wound. The actual cautery was at once applied, until the fang wounds and the adjacent parts were completely disorganized. The dog died without further treatment in 35 minutes. Dr. Fayrer remarks: "In this case notwithstanding the ligature, which was applied as tightly as two persons could pull it round the leg, and the deep and thorough actual cauterization, immediately after the bite, the snake poison found entry into the system and proved fatal in

35 minutes. . . . . Nothing, it seems to me, can more strongly demonstrate the extremely subtle and virulent nature of the Cobra poison than these experiments. Nothing I think is more significant of the improbability of anything proving to be an antidote. If the poison find entry into the blood vessels, and be carried to the nerve centres, I am inclined to believe that nothing can prove of any avail, excepting in those cases when the bite is imperfect, the quantity or the quality of the poison diminished or deteriorated, or the snake itself is young, weak, exhausted, or is one of a less poisonous family, such I believe are the only cases in which recovery occurs, through the inherent vigour of the animal or person bitten, perhaps aided by stimulants and excitement." Thanatophidia, p. 97.

Still more instructive is the third case I will now quote. "A very large and vigorous pariah dog was bitten in the marginal fold of integument between the thigh and abdomen, by a Cobra, at 3-55 P.M. The part was immediately cut out with a bistoury, the places where the fangs had penetrated being completely removed. The instrument was at hand, and the operation was done at once. Two seconds, not more, might have intervened between the bites and the excision. At 4 P.M., some brandy was poured down the dog's throat; 4-6, another dose of brandy administered; 4-16, he is excited, and respiration hurried, perhaps from the brandy; 4-25, the dog is not yet affected by the poison; 4-33, much the same, the breathing rather hurried; 4-42, no symptoms of poisoning except the hurried breathing, and that may be from excitement; 4-47, more brandy given; 4-50, no symptoms of poisoning yet; 5-10, vomited, shows symptoms of being poisoned; 5-15, vomited again; 5-30, restless, breathing hurriedly, abundant flow of saliva; 6 P.M., slight convulsions, breathing hurried; 6-30, dead. Bitten at 3-55, dead at 6-30, in two hours and 35 minutes.

Here again the extraordinary virulence of the poison is shown. The snake bit in a fold of skin, which was immediately excised yet in the slight interval—it could not have been more than two

seconds—enough of the poison had entered the circulation to cause death in two hours and 35 minutes, notwithstanding the free administration of brandy. The dog, too, was an unusually large and vigorous animal." Thanatophidia, p. 105.

Again on the critical question, the possibility of arresting the poison after an effective bite. Dr. Fayrer remarks—"That such *may* be done, I will not deny, but the two experiments just recorded, performed with the greatest care and speed by two Surgeons accustomed to such operations, show that at the least it is very difficult. The moment of time that intervenes between the injection of the snake poison by the powerful maxillary muscles through the tube like fang into the minute blood vessels of the part, and the application of the ligature and actual cautery, is sufficient to allow of the entry of the poison with in the circulation, and this reaching the nerve centres, even in a small quantity, may prove fatal."

For further details of this most interesting subject, reference must be made to Dr. Fayrer's work, but I will record the chief deductions from the experiments made and other data therein brought together and reviewed.

1. Snake poison is not only active when injected into the system, but developes its poisonous action when applied to a mucous surface, on the conjunctiva.

2. The blood of an animal killed by snake poison, is itself a powerful poison when introduced into the system of another animal.

3. The milk of a woman bitten by a poisonous snake, is fatal to the child, if allowed the breast. (Shircore's case at Dum-Dum.)

4. The poison of the colubrine snakes does not interfere with the coagulation of the blood after death in the lower animals, but the blood remains fluid (as a rule) after death from the bite of a viperine snake. Authentic particulars on the state of the blood of the human subject after colubrine poisoning are still wanted.

5. Symptoms of poisoning after an effective bite, are visible after the lapse of a few seconds only, and should the poison have penetrated a large vessel, death may result within the minute, though such a case is of course rare.

6. The bite of a poisonous snake seems to exercise no influence on another poisonous snake, *of the same family* or on itself, but is fatal, though slowly, to a harmless snake.

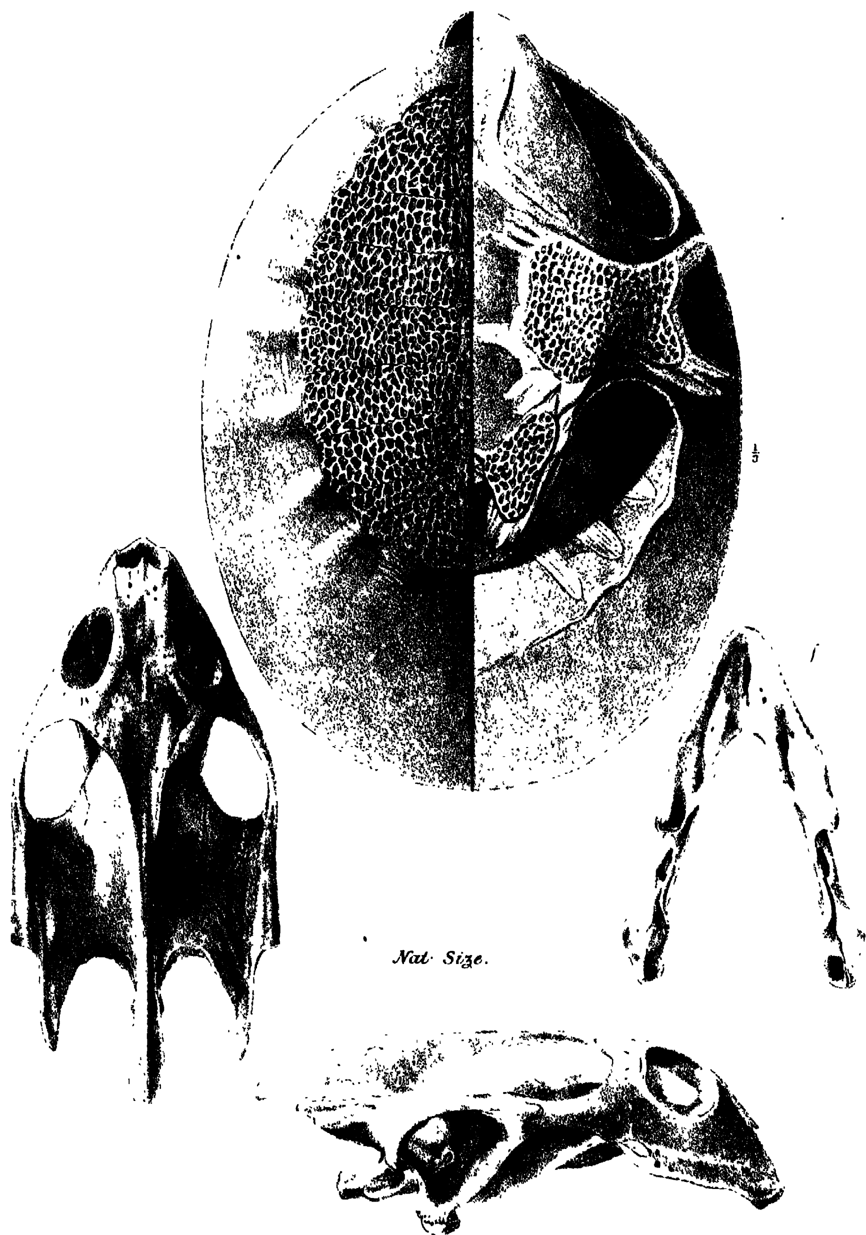
7. The most deadly poison seems to be that secreted by the two Najas and Russell's viper, and scarcely less potent is that of the Echis, the Bungari, and Hydrophidæ. The poison of the Indian Crotalidæ however, though certainly occasionally fatal, is not perhaps usually so, and there is always fair presumption of recovery from the bite of our green vipers. Trimeresurus, &c.

8. Specific remedies or antidotes for snake-poisoning there are none. Where the bite has been, from any cause only partially effective, diffusible stimulants as ammonia and alcoholic mixtures may be resorted to with benefit, to aid the flagging powers of life.

9. Cases have often occurred of men bitten by harmless snakes exhibiting symptoms of most alarming prostration, and being reduced to a moriband condition through fear only, so that every endeavour should be made to secure the snake, as its recognition as a harmless species is all that is wanted in such case, to effect a cure.

In the Madras Monthly Journal of Medical Science for November 1870, Dr. E. Nicholson has a Paper on some popular errors regarding Indian snakes. In correcting these Dr. Nicholson does not escape some inaccuracy himself, as where he describes the tongue as "capable of rapid and vibrating protrusion through a chink in the rostral shield." This is, however, no doubt merely the result of a clumsy and inaccurate mode of expression, as it would be if a man were described as protruding his tongue through a chink in his upper lip. Dr. Nicholson's views, however, on the

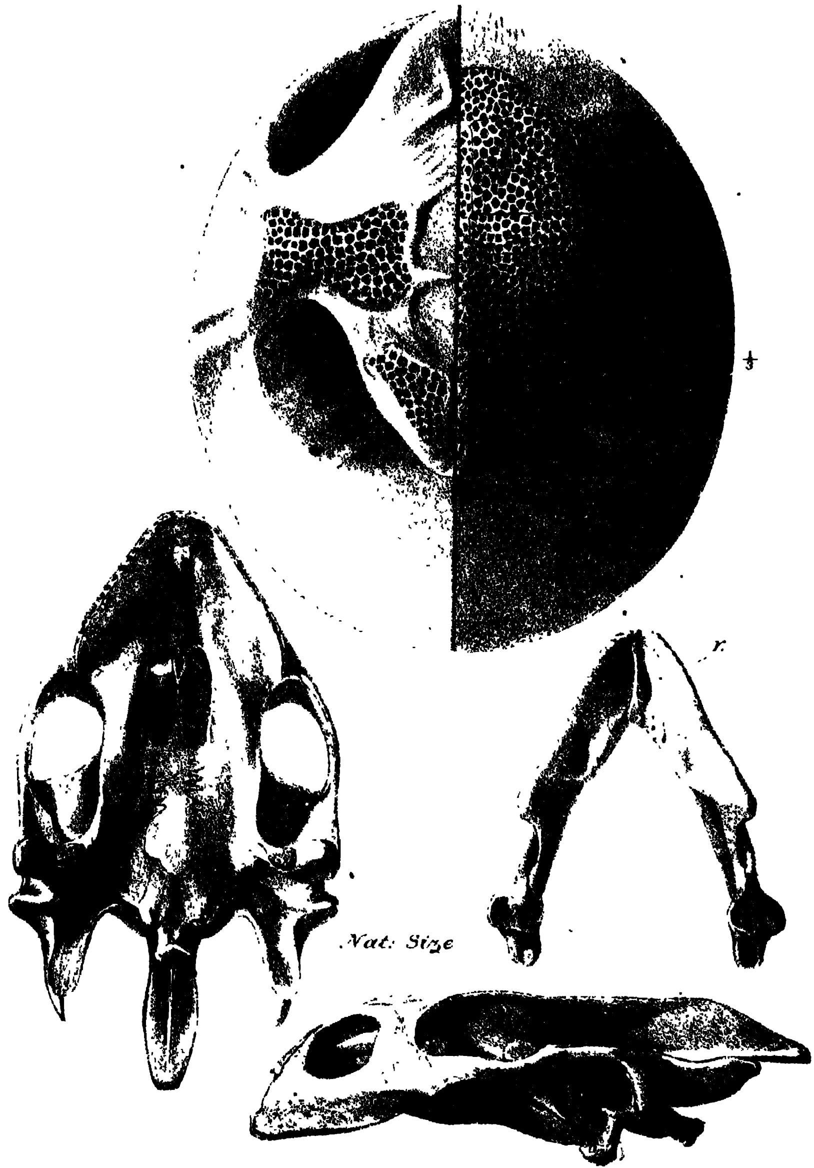
true reason of the immunity of some snake-catchers, from serious results from snake-bite, are very curious, and deserving of very full investigation, as he sees reason to attribute it, to a continuous system of inóculation with snake venom, the result of which is that the elder men among the Burmese snake-charmers possess greater powers of withstanding snake poison, than the younger, owing to the more perfect protection enjoyed by them from inoculation persevered in through many years. I doubt the fact myself, but it is certainly a curious assertion, to emanate without good reason, from an Assistant Surgeon who for years has made these animals his companions, as well as subjects for study.



J Schaumburg, Lith

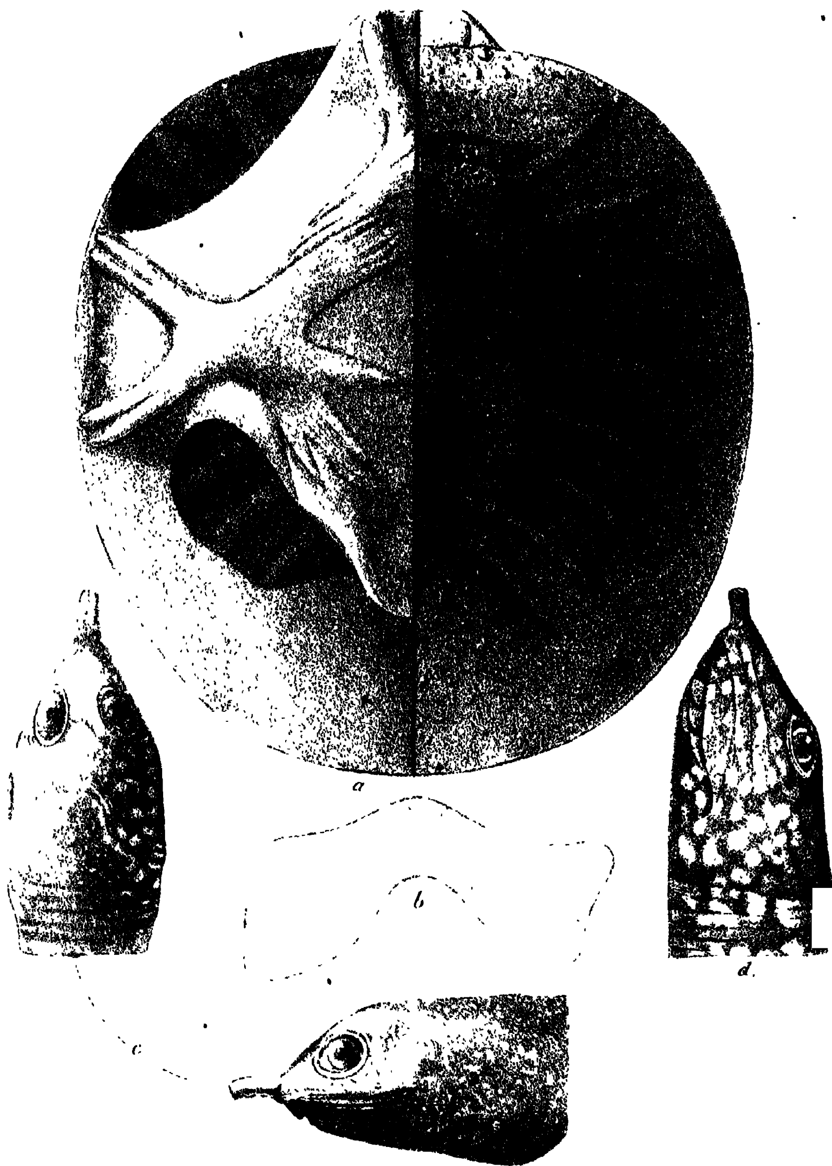
T. OCELLATUS. Buc: Ham:

T. hurum. B.H apud J. Anderson



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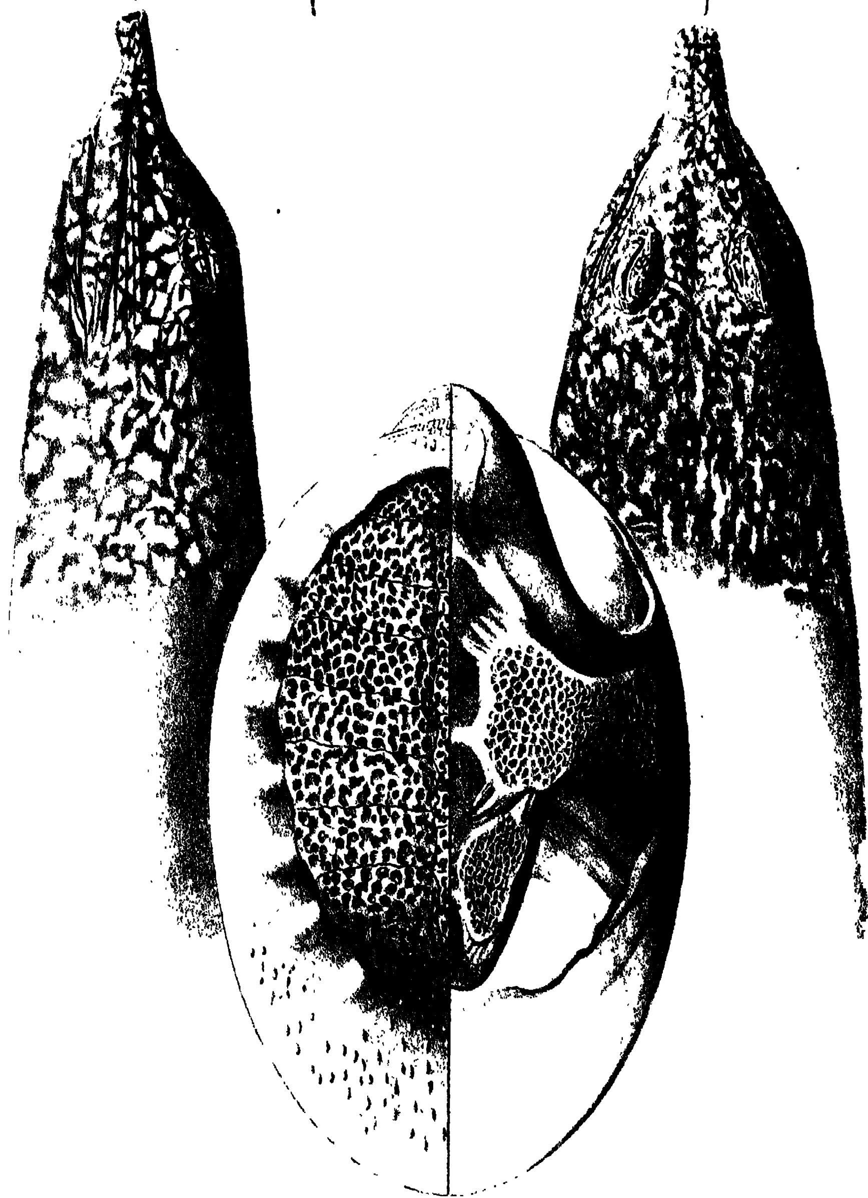
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a. b. c. T. EPHIPPIUM n. s.

d. T. JAVANICUS Geoff.



Trionyx stellatus Geoff.



Trionyx carinifera, Gray (?)
T Thayrei Theob